

ELECTRIC REFRIGERATION NEWS

The business newspaper of the electric refrigeration industry

VOL. I. No. 17

DETROIT, MICHIGAN, MAY 25, 1927

PRICE FIVE CENTS

A.S.R.E. MEETING AT WHITE SULPHUR

Study of Household Equipment
Continued at Fourteenth
Spring Meeting

A joint meeting of the American Society of Refrigerating Engineers and the American Society of Mechanical Engineers was held at the Greenbrier Hotel, White Sulphur Springs, West Virginia, May 23, 24 and 25. Engineers who have been prominent in the development of electric refrigeration equipment took an active part in the program and considerable attention was devoted to the discussion of household equipment.

L. A. Phillips, of the University of Michigan, and C. C. Spreen, chief engineer of the Kelvinator Corporation, presented papers discussing the capacity and efficiency of small reciprocating compressors. J. R. Hornaday, of Pennsylvania State College, presented a comparison of refrigerants for small units. F. E. Sellman, of the Electrolux Servel Corporation, discussed phases of gas-fired refrigerators, his paper being a continuation of talks at previous meetings of the Society.

The program of the technical sessions was as follows:

Technical Sessions

Monday, May 23

Morning Session

President W. H. Carrier, Presiding
Report of Corrosion Committee.....
R. P. Russell, Mass. Inst. of Tech., Cambridge
Certain Physical and Chemical Properties of Methyl Chloride.....
H. J. Macintire, C. S. Marvel and S. G. Ford, Univ. of Ill., Urbana
Manufacturing Costs.....
E. S. Schenck, Brunswick-Kroeschell Co., New Brunswick, N. J.
Evening Session
A Study of the Factors Affecting the Capacity and Efficiency of Small Reciprocating Compressors.....
L. A. Phillips, Univ. of Mich., Ann Arbor, and C. C. Spreen, Kelvinator Corporation, Detroit, Mich.
The Gas-Fired Refrigerator.....
F. E. Sellman, M.E., Electrolux-Servel Corporation, New York City
Air Conditioning in the Theatre.....
L. L. Lewis, Carrier Engineering Corporation, Newark, N. J.
Balancing Compressor Power and Condenser Water Costs.....
R. W. Waterfill, Carrier Engineering Corporation, Newark, N. J.

Tuesday, May 24

Afternoon Session

The Effect of Compressor Speed upon Refrigerating Capacity and Efficiency.....
C. C. Spreen, Kelvinator Corporation, Detroit, and L. A. Phillips, Univ. of Mich., Ann Arbor
A Comparison of Various Refrigerants for Small Units.....
J. R. Hornaday, Penn. State College
A Method for Testing Domestic Refrigerating Machines.....
C. D. Haven, Vilter Mfg. Co., Milwaukee, Wis.
The Effect of Cold Storage on Clothes Moths.....
E. A. Back and R. T. Cotton, Bureau of Entomology, Dept. of Agriculture, Washington, D. C.
Characteristics of Centrifugal Pumps.....
H. J. Meeker, for the Hydraulic Society, New York
A Comparison of Standard Flow Meters.....
A. J. Nicholas, Penn. State College

Wednesday, May 25

Afternoon Session

Factors Governing Liquefaction of Carbon Dioxide.....
J. C. Goosmann, The Frick Company, Waynesboro, Pa.
Effect of Moisture on the Heat Transmission in Insulating Materials.....
L. F. Miller, Dept. of Physics, Univ. of Minn., Minneapolis

All Salesmen, Installers and Servicemen Are Regular Subscribers

"Our entire sales organization takes a great deal of interest in looking forward to your publication each issue as it contains information that is invaluable and from every angle of the refrigeration industry. "Am pleased to mention that all of our merchandise salesmen and installers as well as servicemen are now regular subscribers."—W. L. Wetz, Merchandise Sales Manager, Union Light, Heat & Power Co., Fargo, North Dakota.

Tubing for condensers

Smooth. No possibility of scale. Up to 100 foot lengths. Formed to your order.
1431 Central Ave., Detroit, Mich.

WOLVERINE
SEAMLESS COPPER AND BRASS TUBING

Views of Central Station Executives on Future of Electric Refrigeration

Confidence Expressed in Reliability of Present Equipment, Believe in Ability
to Solve Service Problems, Customer Satisfaction Assured.
Rapid Expansion of Market Predicted.

PLAN TO SATURATE LINES WITH ELECTRIC REFRIGERATION LOAD

Customers Now Getting Satisfactory Service—Machines Cause Little Trouble

By R. B. West, President and Gen. Mgr.,
The Southern Sierras Power
Company, Riverside,
California

The Southern Sierras Power Company is doing business in five counties in California and selling power for resale in Nevada, Arizona, and Mexico, and has always been deeply interested in the development of the household electric refrigerator. For many years small electrically operated refrigerating plants have been used over our system in meat shops, restaurants, hotels and drug stores, and large ice factories electrically operated have been supplied with our electric power.

Knowing something of refrigeration, the company withheld entering the field as a distributor until the units themselves were more nearly perfected and the prices brought within reach of the average household, although during that time many refrigerators were sold by dealers to our customers.

Within the past two or three years the improvements and developments have been very great. Units are put out which are

ABSOLUTELY SAFE TO PROMOTE ELECTRIC REFRIGERATION NOW

Co-operating with Contractor-Dealers in Extensive Newspaper Advertising

By Louis B. Round, District Manager,
Pennsylvania-Ohio Power & Light
Company, New Castle, Pa.

We are of the opinion that the experimental stage is long since past. The advertised makes of refrigerators on the market are stable and dependable, and it is absolutely safe to promote the use of this particular appliance. In fact, not to promote its use is to stamp one as being very much behind the times.

The golden harvests and profits both for the dealer and public utility are awaiting the gleaner, and by the co-operative effort of both, the sales can be made to mount tremendously.

We believe it to be in the interests of our service to promote the sale of electric refrigeration. In the past we have fostered a close spirit of co-operation between the contractor-dealers and the public. We do not merchandise directly, but every facility of this company is placed at the disposal of the contractor-dealer, both as to display space and personal contact, that is possible for us to offer.

At the present time we are sponsoring an advertising programme consisting of a full page advertisement in a prominent paper of country-wide circulation, run for five consecutive weeks, commencing April 28, one issue per week, of which space the major portion is taken care of by the company, and five individual dealers contribute sufficient to fill out the entire page. That this will have a tremendous effect upon the spring and summer sales is not to be denied. In addition to which, prominent displays are made possible in our office, where the machines are seen in operation.

As stated above, we do not merchandise directly, but our policy of co-operative merchandising by, with, and through the dealers, has shown excellent results. We play absolutely no favorites, but give to each dealer every assistance that he can possibly request, which will help him in the placing of his particular electric refrigerator. There are five active dealers having separate agency contracts in this city, and we are satisfied that this year will show remarkable results.

A large field has developed in the sale of commercial units and with the ever-increasing radiation of public utility service in the rural communities, there is certainly territory enough for selling the customers electric refrigeration to satisfy the most active sales agent.

COMMENDS EFFORTS OF MANUFACTURERS AND HIGH PLANE OF BUSINESS

Decided Improvement in Design and Operating Efficiency Each Year

By Arthur Williams, Vice-President,
Commercial Relations, The New
York Edison Company,
New York

The automatic electric refrigerator for home service has met with a remarkably appreciative and promising reception on the part of the public. It constitutes an important step in the better and more economical conduct of the home, both from a financial and a sanitary standpoint.

The refrigerating effect in itself is satisfactory and stable and is not expensive to operate; it is reported to be of great economic health value in the better preservation of food.

Each year there is seen a decided improvement in design and operating efficiency—meaning by the latter freedom from interruption and necessity of repairs. It seems unnecessary to say that its development and general use should be encouraged in every possible way by the public utilities. They have not only the proper objective of a desirable addition to their electrical output, but an unusual opportunity to emphasize the importance of electricity in the modern home, in this and the many other ways in which it may be used to advantage.

In their effort to produce the best and most efficient in the electrical and mechanical equipment, and for the high plane of advertising and merchandising effort shown by the manufacturers, our industry is to be highly congratulated.

CUSTOMERS' WELFARE A VITAL CONCERN OF CENTRAL STATIONS

Approves Statement of Chairman Young in Previous Issue

By F. R. Phillips, Vice-President and
General Manager, Duquesne Light
Company, Pittsburgh, Pa.

The article by H. E. Young, of the Northern States Power Company, contained in your issue of April 13th, portrays in a direct and most convincing manner the present thought of the central station operators. It is quite natural that the viewpoint of the electric refrigerator manufacturers should differ in some respects to that of the central station operators.

Central station companies are more vitally concerned with the customers' welfare in the matter of the use of electrical devices than any manufacturer of such devices could possibly be, and therefore the operators of necessity are bound to be more conservative than would otherwise be the case.

I am in full accord with the statements by Mr. Young.

CENTRAL STATIONS SHOULD MAINTAIN FULL RETAIL PRICES

Great Field for Electric Refrigeration in the South

By A. B. Collins, Commercial Manager,
Alabama Power Company,
Birmingham, Ala.

Our company has merchandised electric refrigerators almost two years and with considerable success. We are thoroughly convinced that central stations should actively merchandise this product on a high plane, and with a full maintenance of retail prices; that they should maintain service departments fully equipped for taking care of the makes of machine that they sell, and should in the near future expand their service departments to take care of all makes of refrigerators.

We believe the South is a great field for this, because refrigeration is needed over a greater period of the year than in other sections.

REFRIGERATION OFFERS GREAT OPPORTUNITY, ALSO RESPONSIBILITY

Dealers Must Make a Profit—Servicing of First Importance

By E. W. Lloyd, Vice-President, in
Charge of Sales of Electric Light and
Power, Commonwealth Edison
Company, Chicago

It is very difficult for me to add anything to my already published statements relative to the relation of domestic refrigeration to the central station business, but I am outlining below some of the points that have occurred to me as having some merit:

It is quite well recognized by central station companies that the domestic refrigerating machine presents a wonderful opportunity to increase the sale of kilowatt hours on residential meters. For this reason, the central station companies have gone a long way in trying to help in the furthering of the installation of such machines. Perhaps some of them have gone at this job too rapidly, as the very best of refrigerating machines are as yet none too perfect.

It is recognized that quantity production of a machine of this class is essential to low price, but where production is secured at the expense of proper manufacture, assembly and installation, such a situation may cause some one more expense and annoyance than the increased production is worth. It must be recognized that there are a great many things about the machines themselves and the boxes, particularly the latter, that we do not know. Lower temperatures as the result of the use of mechanical refrigeration have brought about conditions in boxes which were heretofore unknown and which have resulted in material changes in the design and construction of the boxes, within the last two years, and still the end has not been reached. It seems almost essential that widely fluctuating temperatures of air should not be allowed to permeate the walls of the boxes, and that the material, whether steel or wood, should be fabricated and put together in just the right way, if the best results are to be obtained. In other words, we have had almost as much to learn about the construction of the boxes as we have about the machine itself.

Power Factor of Motor Important to Central Stations

Another important question that has aroused the curiosity of central stations is as to the type of motor that has a reasonable power factor, and the type of machine

UTMOST CONFIDENCE IN VALUE AND FUTURE OF ELECTRIC REFRIGERATION

Sales and Service Force Organized for Aggressive Effort

By F. A. Coffin, Sales Manager,
Milwaukee Electric Ry. & Light
Co., Milwaukee, Wis.

From the program of activities which has been undertaken by our commercial forces, we have utmost confidence in the value and ultimate extensive use of electric refrigeration for homes, apartments and miscellaneous small commercial establishments, as well as for the larger installations about which there appears to be no question.

We watched and studied the developments in electric refrigeration for about ten years, and then decided that progress in the use of electric refrigeration in our communities could be effected very materially by our selling and installing equipment and keeping it in satisfactory operation after it is installed, by an adequate servicing organization.

We have, therefore, established an electric refrigeration sales force and an installation and servicing organization and are aggressively trying to get electric refrigeration used by our customers. The results so far are sufficiently satisfactory, not only to maintain our interests in this line, but to lead us on toward larger activities.

RECORD CROWD WILL ATTEND N.E.L.A. MEETING

Electrical Industry's Largest
Association to Hold 50th
Annual Convention

ELL C. BENNETT TO DELIVER
REFRIGERATION ADDRESS

Attitude of Central Station Executives of Prime Importance to Industry's Development

Ten thousand executives, commercial and engineering representatives of the leading electric public utility companies of the country, members of the National Electric Light Association, will attend the fiftieth annual convention to be held on Young's Million Dollar Pier at Atlantic City, New Jersey, June 6-10. An elaborate exhibit of electrical equipment and appliances will be staged. Electric refrigeration will occupy a prominent position in the exhibit. Many of the largest manufacturers have reserved space to present and demonstrate their various models.

Electric refrigeration will also be given special attention on the program. Ell C. Bennett, editor of *Electric Light and Power*, Chicago, will deliver the address on electric refrigeration Tuesday afternoon, June 7th. H. E. Young, of the Northern States Power Company, Minneapolis, chairman of the N. E. L. A. Refrigeration Committee, will report on the activities of the committee during the past year and submit recommendations for the guidance of the central stations in the future development of electric refrigeration. The program of the general session of the convention is published in full below.

Convention Program

Atlantic City, June 4-10, 1927
General Sessions

TUESDAY, JUNE 7, 9:30 A. M.
Address of welcome, Mayor Anthony M. Ruffo, Jr.
Address, President R. F. Pack.
Report of treasurer, P. S. Young.
Address, "Our Membership," Howard K. Mohr, Philadelphia.
Report of managing director, Paul S. Clapp.
Report, W. A. Jones, chairman Public Relations National Section.
Address, Gerard Swope, president, National Electrical Manufacturers' Association.
Address, "A New Way Into the Hearts of Your Customers," M. H. Aylesworth, president National Broadcasting Company, Inc.

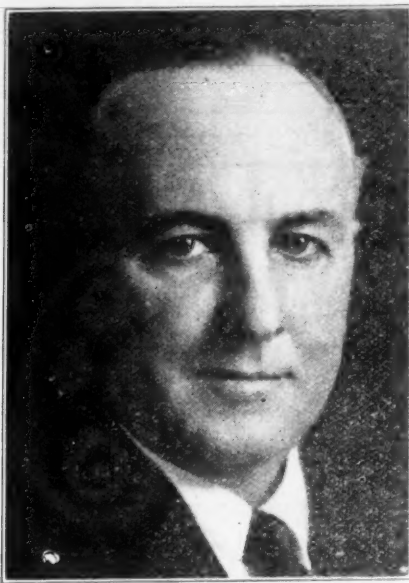
WEDNESDAY, JUNE 8, 9:30 A. M.
Report of exhibition committee, E. W. Goldschmidt.
Report of codes and standards committees, Irvin W. Day.
Report, J. E. Davidson, chairman Commercial National Section.
Report, Edwin Gruhl, chairman rate research committee.
Address, "Comments on Regulation," J. F. Shaughnessy, president National Association of Railroad and Utilities Commissioners.
Address, "Mutual Rights and Obligations," Lovick P. Miles, Publisher *Commercial Appeal*, Memphis.
Address, Dwight F. Davis, Secretary of War.
Address, "Continuing Guarantee as Affecting Third-Party Liability," R. D. Moot, attorney General Electric Company.

WEDNESDAY, JUNE 8, 2:30 P. M.
Award of prizes in Forbes public relations contest.
Symposium, "Railroad Electrification," Britton I. Budd, chairman committee on electrification of steam railroads, and Ralph Budd, president Great Northern Railroad.
Address, "The Accounting Department in Rate Cases," H. M. Edwards, vice-president New York Edison Company.

(Continued on Page 9, Column 1)

An Outstanding Sales Feature
for REFRIGERATORS

WIRE PATENTED
AIRTITE
CUSHION
GASKET



JOHN B. MILLER

IDEAL MARKET OFFERED IN CALIFORNIA

Every Reason to Expect a Great
Future for Electric
Refrigeration

By John B. Miller, Southern California
Edison Company, Los Angeles, Calif.

The electric light and power industry has had the matter of electric refrigeration under close observation for a great many years. The industry very early recognized the fact that electric refrigeration presents a remarkable opportunity to increase the load, and is also a help toward maintaining close contacts with consumers.

California, enjoying a uniformly mild climate throughout the year, offers an ideal field for electric refrigeration, and California companies have recognized this and have done everything possible to promote electric refrigeration. Progress to date has been retarded by the high cost of the refrigerators, due, perhaps, to the large amount of research work necessary to their refinement, and also by those minor defects always existent in a new development. There has been constant improvement in both of these conditions, which has been reflected in increasing sales and use of electric refrigerators. We have every reason to expect a great future for this service.

SOLD ON FUTURE OF ELECTRIC REFRIGERATION

By J. T. Hanlon, Jr., Manager Tampa
Electric Company, Tampa, Florida

Regarding an experience in the household electric refrigeration business, our knowledge is limited to one year's actual practice, but from the tendency of the only manufacturer with which we have dealt, namely, Servel. We believe that this new appliance is going to pass through the stages of making itself adaptable to the central station, much faster than any comparable piece of equipment placed on the electric market in the last 20 years.

The manufacturers seem glad and anxious to play ball with the central stations, admit their mechanical shortcomings and do as we do—allow the customer to think he is right until he can be persuaded that he is mistaken.

We believe that the market for the sale of electric refrigerators is the greatest in the industry, and that its revenue producing possibilities are to be preferred to those of any appliance yet offered.

The service end or the critical part of electric refrigeration is not yet perfect, but this is gradually getting to the place where with simpler mechanism it will be secondary to the sales, rather than the reverse.

We are sold on electric refrigerator marketing, and are planning sales campaigns on it in the very near future.

REX COLE TO BE NEW YORK DISTRIBUTOR FOR GENERAL ELECTRIC

The Electric Refrigeration Department of General Electric Company at Cleveland announces the appointment of Rex Cole as general distributor for New York City and the metropolitan district. His display rooms are to be located at 5 East 45th St.

Mr. Cole has for a long time been associated with General Electric interests. Until recently he was president of the Miller Company, a consolidation of the Duplex Lighting Works of the General Electric Company and the Edward Miller Company of Meriden, Conn. It was while the head of the Miller Company that Mr. Cole conceived the "Home Lighting Contest," the largest educational campaign ever undertaken in behalf of the electric light and power industry.

The new General Electric refrigerator has been in production since February at the Schenectady and Fort Wayne plants, and will shortly be offered throughout the United States in a variety of sizes and cabinet designs. It is the result of 15 years' research by General Electric engineers. A comprehensive advertising campaign in national magazines and newspapers is to be launched early in June.

OPPOSES PLAN OF POPULAR SCIENCE

Approves Viewpoint Expressed in
Recent Editorial

By G. E. Miller, Sales Manager, The
Cleveland Electric Illuminating Co.,
Cleveland, O.

The editorial appearing in *ELECTRIC REFRIGERATION NEWS* for April 27, on the subject of "Test and Approval of Electric Refrigerators" appeals to me very timely.

I do not believe it is the function of any self-constituted committee or organization in the electrical industry to set itself up as the judge of what is good or bad in the appliance line. I speak from experience regarding this matter, as several years ago the committees on refrigeration of the N. E. L. A. and the Edison associations undertook to make tests on refrigeration equipment. Such tests were made and the results published in the committee reports. While I do not mean to say that some good was not accomplished as the result of this work, I am, however, satisfied that the making of tests under such conditions and publishing the results may be very unfair to the manufacturer of such equipment. Obviously the results of testing one or two machines should not be used as a criterion by which to judge such manufacturer's product. The particular machines tested might be either better or worse than the general run, in which case the test results are of no value in judging of the merits of the product.

The publishing of the tests above referred to got our committees into all kinds of trouble. Furthermore, I am not at all sure that the committee or association undertaking that sort of thing is not letting itself open to some legal liability should a manufacturer who felt himself aggrieved choose to retaliate.

Ever since those reports were published I have been advocating that the N. E. L. A. Refrigeration Committee, for instance, should not undertake any more work of that kind. Just what that committee expects to do in its report this year I do not know, but I hope they will not publish any tests.

If a central station company engaged in merchandising activities, or some distributor who is doing so, chooses to make tests for his own information, that is quite a different matter.

I am pleased with the position you took in your editorial, and I hope that you will keep it up, as I know there are some people still very much in favor of continuing this test work.

REFRIGERATION OFFERS GREAT OPPORTUNITY

(Continued from Page 1, Column 1)

that will operate the least on the peak. There are some classes of machines that start up very soon after the door of the box has been opened. If this type of machine is operated in communities where the dinner is the evening meal, then you will find this machine operating directly on the peak of the central station. In those communities where the principal meal of the day is at the noon hour, this situation would not be so serious.

The question of servicing these machines is of first importance. The time will undoubtedly come when they will not require nearly as much servicing as they do now, but all of them require quite a lot of attention, if all of the truth were known about each make.

Manufacturers cannot exercise too much care in making the parts of these machines and in their assembly, and last but not of least importance, the installation of the machine on the customer's premises.

Laboratory Tests of Little Value

Arbitrary tests in laboratories are of very little value as compared with the experience to be gained through a hot summer with a machine in the hands of some one who does not understand how it functions. In other words, these machines must be as nearly fool-proof as possible; they must also be made much less noisy than they are at the present time. The American people are inclined to accept any new device that will give them more leisure and which is convenient and will save labor, in the first development, and do not complain very much about defects such as a noisy machine; but in the long run some wise manufacturer comes along with a device that has not these imperfections, with the result that the industry is required to change to the new basis in short order. In large cities, where immense buildings are equipped with noisy machines, trouble is bound to ensue.

Proper Location and Ventilation Must be Watched

The architect frequently wants the machines installed in places where they are inaccessible and where there is an absolute lack of ventilation. Installing machines in kitchenettes, where cupboards and other impediments are installed for the convenience of the maid or housewife, has resulted in improper allocation of room for the refrigerating machine, and in the grand rush for business some manufacturers agree to install machines where they will never operate satisfactorily. This is but

(Continued in Column 4, this Page)



C. S. MACCALLA

MUST HAVE SERVICE MEN ON JOB FOR QUICK ACTION

Field for Business Is Assured But
Manner of Development Is
in the Making

By C. S. MacCalla, Vice-President and
General Manager, Pennsylvania
Ohio Power & Light Company,
Youngstown, Ohio

Domestic refrigeration is developing more rapidly than any other factor in electric merchandising.

The problem that confronts the manufacturer, the distributor, the dealer and the electric power supply company is whether the electric refrigerator shall be sold as a commodity or electric refrigeration shall be sold as a service.

This problem must be solved speedily and adequately. The field for the development of the business is assured. The manner of developing it is still in the making.

The ordinary refrigerator has been sold as an article of furniture. There has been no service required of the seller. Except in event of definitely faulty workmanship, there has been no adjustment to be made. The price that the buyer could afford, or was willing to pay, largely determined the efficiency and longevity he could expect.

But the electric refrigerator is more than an article of furniture—it is an article of furniture plus a machine that must give definite, constant and satisfying service. Its purchase by the householder is an investment of a size which warrants the application of such service over a long period of time.

Several excellent makes of electric refrigeration units on the market fully meet these requirements, provided there is someone on the job to meet promptly, efficiently and cheerfully the occasional service calls that may reasonably be expected. No moving machinery is fool-proof, and some adjustments are to be expected in any event.

A call for service is a signal of distress. Failure to answer the call speedily may precipitate a household catastrophe, spoiled food, perhaps, and a dismal Sunday dinner.

To the power supply company preparedness to answer service calls is no novelty. Some, but not all, electrical dealers have provided adequate service facilities for the appliances they handle. Washday may be postponed with comparatively little inconvenience if the electric washer is out of commission, but refrigeration, especially during the summer, cannot be postponed.

Therefore, provision for thorough and immediate service is an essential to electric refrigerator merchandising. The manufacturer, distributor, and dealer must not only back up their merchandise in the ordinary sense; they must have service men on the job ready for quick action.

Electric refrigeration in the home is no longer a novelty or a luxury. Good merchandising, which must include good servicing, is the means for bringing it near the point of saturation within the next few years.

Articles by Ryan and Hendrickson Intensely Interesting

"We find the article, Fundamental Principles of Refrigeration Explained, by C. B. Ryan, Jr., and J. F. Hendrickson, in the May 11 issue of the *ELECTRIC REFRIGERATION NEWS*, intensely interesting, and we want to place a copy of this issue in the hand of every one of our refrigeration dealers.

"We also found the article, Causes of Food Spoilage, in the April 13 issue, very interesting. We would like to have you forward us seventy-five (75) copies of each of the above mentioned issues of the *ELECTRIC REFRIGERATION NEWS*, billing us for the cost."—H. R. Edwards, The McGraw Co., Omaha, Nebraska.

Note: We are pleased to announce that both of the above articles are being reprinted in booklet form for quantity distribution. For sample copies and prices, please address *ELECTRIC REFRIGERATION NEWS*, 554 Maccabee Bldg., Detroit.

CARLETON COOLER ORGANIZED TO MAKE "ZEROIC" MACHINE

New Michigan Company Organized
by A. H. Hooper

Announcement has been made of the formation of the Carleton Cooler Corp., for the manufacture of the "Zeroic" electric refrigeration machine, invented and developed by A. H. Hooper, of Detroit. The new company is said to be capitalized for \$200,000, and plan to buy or build a factory at Carleton, Mich. The corporation is composed of Carleton business men. The following constitute the board of directors: R. J. McCormick, Edward F. Kahlbaum, S. O. Reeves, George Egle, S. D. Barker, and A. H. Hooper.

REFRIGERATION OFFERS GREAT OPPORTUNITY

(Continued from Column 2, this Page)

one of the problems with which we are confronted in this new field. Another point is that some of the agents are so optimistic that they sell machines at prices which make it impossible for any one to net a profit. This particular line has by no means reached the point of price stabilization; it reminds me of the early days of the automobile business; but I trust this business is not going through the spasms that business did in its early development, which resulted in the passing out of hundreds of manufacturers from that field.

Any central station company in the business of selling domestic refrigeration, or that contemplates entering that field, should recognize its responsibility, and should be willing to go along with the manufacturer it ties up with. It should service the machine unless the manufacturer or manufacturer's agent can absolutely demonstrate that either one has facilities for first-class service. The central station company that does not establish such a department will find itself being blamed for poor servicing, the same as if it had undertaken to do this work itself. And if it does not assume its full responsibility in this field, the reaction will be very unsatisfactory.

Like all new fields, we find coming into it a large number of ambitious men, a great many of whom have made failures in other lines; and these men, if they are not properly trained and constantly instructed, are bound to cause the responsible selling agency a great deal of trouble, through promises given and statements made which cannot be fulfilled.

Men Must be Properly Trained for the Job

The future of this business is very bright, and that is the reason it is attracting a certain type of man who has not succeeded in other lines. It is much more important that few men be employed—men who will be able to do a reasonably good job of selling—than to put on the drawing account or payroll a lot of sales talent not properly equipped to do such a job. The cost of selling these machines is very high, when you take into consideration the amount of advertising and overhead expense necessary to do a really satisfactory job. Where an individual agent is trying to carry on with the conditions of competition which he meets, he can not last very long if he cannot make money, and if the manufacturer assumes these costs, he, too, is bound to feel the effects of the conditions of the market adversely. The central station is slightly better off, because it can afford to carry on somewhat longer, as it in the long run has an income from the use of machines, which continues over a long period of years. On top of this, it is usually interested in but one machine of the many on the market, but is reaping the benefits of the income derived from the sale of all the other types of machines, and in the beginning this offsets any losses it may suffer on account of the sales of the machine it is sponsoring.

We are still very decidedly in the promotional stage of this development, and there are a great many things about the situation with which we are not yet familiar. Many of those selling these machines have been fooling themselves as to the cost of doing the business, and it might be well for all of them to look carefully into the facts before taking any steps that might mar the optimism of the public in the use of these machines.

GENERAL NECESSITIES CORP. SELLS ICE AND COAL UNITS LAST WEEK FOR \$6,500,000

The stockholders of the General Necessities Corp., Detroit, Mich., at a meeting May 23 ratified the sale of the entire ice and fuel business of the company for \$6,500,000. The purchase offer was made last week.

The sale will not affect the interests of the corporation in the Absopure Refrigerator division, ice cream, beverage and cold storage lines. Officials of the company state that this sale will materially strengthen the financial position of the Absopure Refrigerator division.

A. JACKSON MARSHALL
Secretary of the National Electric Light
Association.

PREDICT LARGE GAIN IN OVERSEAS SALES

Frigidaire Foreign Manager Re-
turns With Optimistic Report

Frigidaire unit sales overseas will undoubtedly attain 250 per cent increase in 1927 over last year, L. C. Shannon, foreign manager of the Delco-Light Company and vice-president of Frigidaire Ltd., said recently on his return from a three-month inspection tour of Europe.

"Business conditions abroad were never so good, and the sales of our European staff are increasing in almost arithmetical progression. I predict that foreign sales of Frigidaire Corporation will assume astonishing proportions before many years."

During his three months abroad, Mr. Shannon visited England, France, Germany, Italy, Denmark and Holland. He supervised the transfer of European headquarters from London to Paris, and established seven sub-branches in the British Isles.

"The situation in England is very bright," Mr. Shannon said. "At the present time there are more than 500 in our organization in England and Scotland. The entire European organization has been tripled in size during the past six months to keep pace with the growing demand."

"France, likewise, has become a very large market for Frigidaire, and the branch recently opened in Milan is doing extremely well. All through Europe our organizations are doing larger volumes than we had anticipated, and there seems to be no doubt but that the foreign department's sales total in 1927 will be two, and a half times that of 1926 at the very least."

Belsey in Charge of Electric Refrigeration for General Electric in Southern California

George W. Belsey has been appointed to manage the electric refrigeration department of the General Electric Company for the district of Southern California. Mr. Belsey was formerly vice-president of Fuller & Smith, advertising agency of Cleveland, and prior to that time was with the Curtis Publishing Company.

PLAN TO SATURATE LINES WITH ELECTRIC REFRIGERATION LOAD

(Continued from Page 1, Column 2)

more nearly fool-proof, requiring less of expert servicing, and better insulated boxes are being marketed. The prices have been lowered to a figure which sounds reasonable to the man of moderate means, and this company is now actively pushing the sale and use of domestic refrigerators. During the past year, since we began handling a well-known make, there have been placed on our lines a substantial number of domestic refrigerators, which are giving good satisfaction and causing very little trouble to the company or to the owners, and orders are increasing rapidly.

Our territory is widely scattered, our transmission lines extending over a distance of six hundred miles, with distributing centers located very considerable distances apart, and there are no large cities or congested centers served.

We delayed actively pushing electric ranges until the ranges themselves were of such a character and such a price that we felt we could get behind them. Notwithstanding our territory, we have more ranges on our lines today, in comparison with the total number of lighting customers, than any other large company in the state of which we have knowledge. We expect to saturate our lines to a reasonable degree with electric refrigerators, as we are fully convinced that not only has this industry come to stay, but is a very desirable addition to the facilities of the householder and a very satisfactory adjunct to the load of the central station, which will become more and more widespread.

MARVIN DISCUSSES PARTIAL PAYMENTS

Declares System Does Not Discourage Saving

It is a mistake to say that the partial payment system does not encourage saving, Dr. Donald M. Marvin, economist of the Royal Bank of Canada, told the American Management Association at its annual meeting.

"Statistics," he declared, "do not show that savings accounts have suffered as a result of the creation of this type of credit. Moreover the budgeting necessary to meet regular payments under this plan, the true rise in the standard of living made possible to those who find this type of saving more in accordance with their temperament than buying after saving, and the direct part played by the consumer in production control mark this new type of credit as a distinct step forward."

"If you honestly consider the increased expenditure that is typical under the partial payment plan as likely to lead to economic wastefulness, kindly harmonize your argument with the fact that automobile production has immensely increased the wealth of the United States."

"Since consumers credit increases the efficiency of industry by assisting in the regulation of the flow of production, no argument against it will stand on the ground that it is new. On the whole experience has proved it satisfactory. The larger automobile finance companies have experienced losses of less than one-half of 1 per cent. Such experience would indicate that in spite of the rapidity with which consumers credit has become an integral part of our financial structure, it is susceptible of more accurate control than it ever has been before."

"Diversity of risk is the essence of strength of credit risk and surely there can be no greater diversity than that which is obtained by granting credit to the ultimate consumer."—*New York Sun*.

PROPOSE ICE MAN GIVE BOX TO CUSTOMER

Plan Suggested to Create New Markets and Combat Electric Machine

The following extracts from the address of President C. C. Ferber at the annual convention of the Pennsylvania Ice Producers' Association, Philadelphia, March 30, 31, are indicative of the new trend of thought in the ice industry which has come about since the advent of electric refrigeration:

"Dealing with the question of the sale of refrigerators by those engaged in the ice industry, I would quote from a letter written by James Cullen of the City Ice & Fuel Co., of Cincinnati, in which he stated that 'Without the least doubt, the biggest aid, the strongest weapon in combating the small ice machine is by seeing to it that the public gets good refrigerators at a price very close to cost—the cost must be closer to the cost of manufacture than heretofore. The refrigerator is the connecting link between the ice man and a customer. Why should the ice industry, with its tremendous investments at stake, stand back and have any obstructions placed in its way, like the present high prices for refrigerators, a condition that loses old customers and makes new one exceedingly hard to get. As a matter of good business, most of the stores now selling refrigerators should never have been allowed to control the sale of this 'connecting link.' Prices usually charged by them have helped to make ice a luxury and to keep it out of the 'necessity' class."

"The continued success of the ice industry in the future now depends on creating new markets, in getting people to use ice who have never used it before. But each and everyone of these prospects must first buy a refrigerator. Under existing conditions they too often hold back because of the high prices generally asked. This certainly is a hardship to the ice man, especially when one sees the machine people backing up their attractive publicity by direct and modern sales methods. It was not so long ago, that breweries and distillers, due to keen competition, furnished bar fixtures practically free to those customers who handled their products exclusively. Is it unreasonable to advocate the ice man furnishing his butcher or other large ice user with a refrigerator free or nearly so? Such a plan although costly at first, would certainly serve to tie these customers to ice and to make them less open to the wiles of the ice machine salesman. There are thousands of dollars now being spent by the ice men for hit and miss advertising that could be more profitably spent in carrying out what is now suggested."—*Ice and Refrigeration*.

Carefully Studies the Entire Paper

"I take this means of voicing my appreciation for the *ELECTRIC REFRIGERATION NEWS*. I look forward to the arrival of the new issues and not only read them but carefully study your entire publication."—R. W. Neislan, Fort Smith, Ark.

Hurlburt-Still Company Appointed Copeland Distributor for Southern Texas

The Hurlburt-Still Electric Company, of Houston, Texas, has been appointed distributor for Copeland in Houston and South Texas. The Hurlburt-Still firm is one of the oldest and largest electrical firms in South Texas, having been established for more than 26 years, and have a large organization. A display room has been opened at 1207 McKinney Avenue.

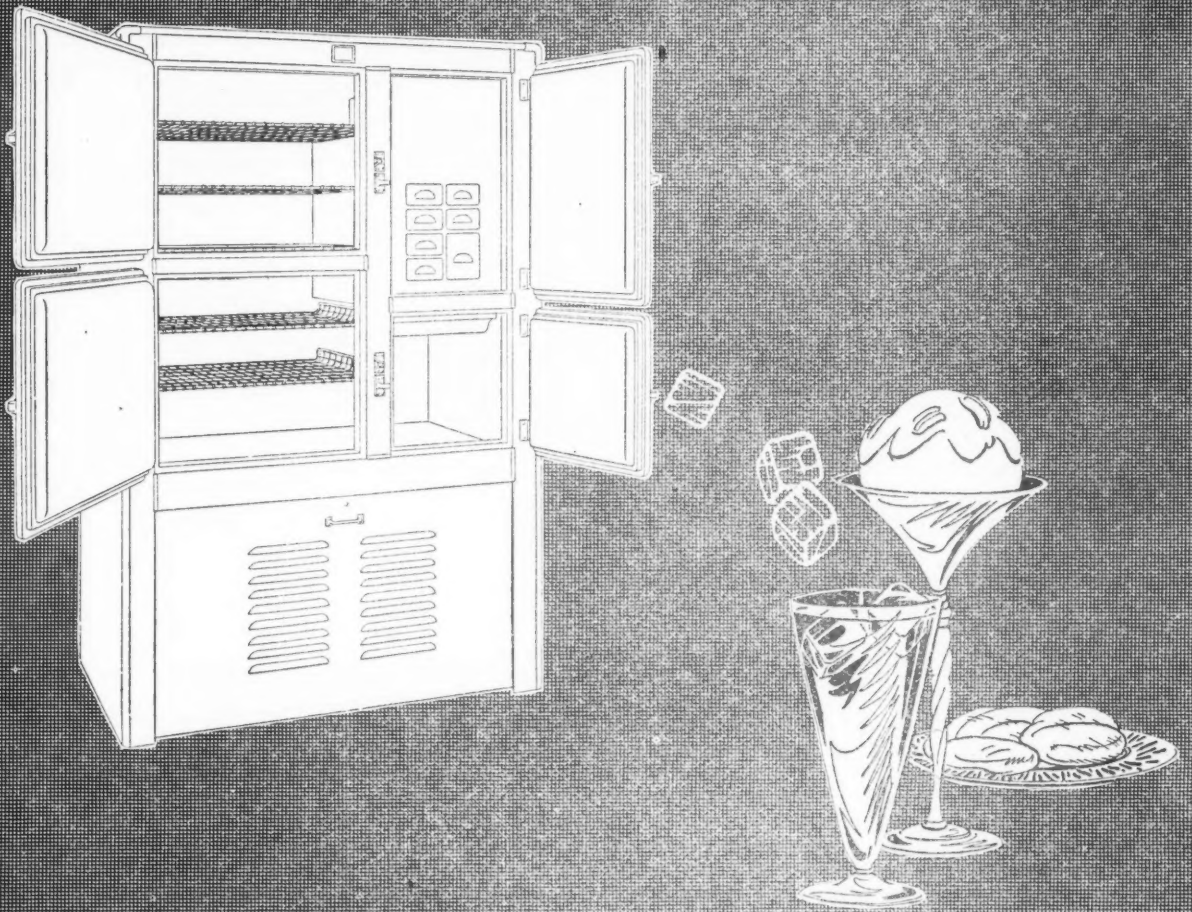
Ehrgott Appointed To Benjamin Electric Mfg. Co. Staff
Karl Ehrgott has been appointed assistant refrigeration engineer of the Benjamin Electric Mfg. Co., Chicago, manufacturers of Crystal porcelain enamel refrigerator cabinets, it was announced last week.

The "News" Provides Selling Helps

"Your REFRIGERATION NEWS is a great little paper, and I find many things in it that are of material aid in selling our Servel Refrigerators."—Richard Schideler, 1703 Green Ridge Street, Scranton, Pa.

Copeland

DEPENDABLE *Electric* REFRIGERATION



An Interesting Display of Copelands at the National Electric Light Association Convention, Atlantic City

Among the many advantages which recommend Copeland to all who are interested in merchandising electric refrigeration, there are two which arouse particular interest:

First, the excellence of Copeland's engineering and construction practices, resulting in *dependable* operation with an enviable record of minimized service.

Second, the completeness of Copeland's line, permitting the dealer to satisfy the electrical refrigeration requirements of every home, from the smallest and most unpretentious to the largest and most palatial.

There are 23 Copeland models in all—9 complete electrical refrigerators, five of them with exclusive all-porcelain cabinets of unexcelled beauty, and

special features of design and construction—and 14 sizes of separate units to fit present refrigerators.

There are food storage capacities of 5 cubic feet to 16 cubic feet; shelf areas of 8 square feet to 23 square feet; ice capacities of 90 to 243 cubes at one quick freezing; double-depth drawers for freezing desserts; defrosting receivers instead of insanitary drain pipes.

Do not neglect to stop at Booth No. 211 when you attend the N. E. L. A. convention. Copeland has an interesting story to relate concerning Copeland's splendid manufacturing facilities, financial stability and remarkable growth. You are cordially invited to visit with us in person or to correspond with us at the address noted below.

COPELAND, 630 LYCASTE AVENUE, DETROIT, MICH.

COMPARES REFRIGERATOR WITH AUTOMOBILE

Shows Problems of Central Station In Providing Service to Users

By Miss Sarah M. Sheridan,
Vice-President and Sales Manager, The
Detroit Edison Company,
Detroit, Mich.

Your letter tells me that many executives of electric refrigerator companies have difficulty in comprehending the viewpoint of the central stations. Your editorial explains that many of these men were formerly in the automobile industry and that they compare the purchase of electricity for refrigerators with the gasoline purchased for automobiles. They know a refrigerator gives increased revenue to central stations just as automobiles give a greater return to oil companies, but they never knew a gas station operator to be concerned about a car as central station men are about the "characteristics" of current consuming devices. In short, the central station seems to be concerning itself needlessly about a matter which appears to involve only the refrigerator manufacturers and the refrigerator users, and you ask me to explain this attitude and the central station viewpoint.

No doubt the greatest obstacle to a better understanding is in this mistake of comparing gasoline with electricity. There really is no comparison. Gasoline is a fuel used to drive an engine, whereas electricity is a belt used to connect an engine to the machine it drives. The only thing we have to compare with gasoline is our coal pile, and if refrigerators had their own engines and came around occasionally to our coal yard for a few shovels of coal, we would have no cause to concern ourselves about its characteristics.

But refrigerators do not have engines, nor anything else to run them. Many people nowadays have forgotten all about engines and some think that electric motors are engines and can drive machines. Motors are not engines—they are not prime movers, and can do nothing without the prime mover. A motor should be compared with a pulley, and electricity is a long belt which connects it with a distant engine, so distant that most people never know about it or have forgotten its existence.

Then perhaps the easiest way to understand the central station viewpoint is to remember that a machine needs an engine and to know what a central station is and does. Even the manufacturers of electrically driven machines—at least, many of them—do not realize that their machines are incomplete—that they are built without a means to drive them, or they think the motor does it. Not only refrigerators, but nearly all other machines are incomplete when the user buys them. They have no engine to run them. Central stations are concerned who are in the business of furnishing engine equipment to drive engineless machines. Light and heat are usually furnished from the same engines.

Few people know better than automobile men that an engine usually costs more than the machine it drives. This is not always true when the engine equipment is part of a large central engine driving many machines—but in the case of domestic electric appliances, where the engine equipment includes an expensive network of wires and cables spread over a large territory, the cost as a rule still remains as great or greater than the machine it runs. Also, few people know better than automobile men that there must be agreement between an engine and the machine it drives, and vice versa. Otherwise the belt might slip or break, thus interfering with the engine and in turn annoying light, heat and other power customers connected to the same engine.

So then, in this business of furnishing engine equipment for engineless machines there are two things about the machine which concerns us very much. One is an engineering requirement—the machine and engine must agree. The other is economic

and has to do with the investment in engine equipment to drive the machine.

The engineering features are important and concern us inasmuch as the machines must not disturb service to other customers. For example, a reciprocating machine without enough flywheel capacity will cause a pulsation of the lights, which can annoy the occupants of a whole apartment. Larger machines can in the same way affect a whole neighborhood, and cost the central station unnecessary investment to offset. Or the machine may be so designed that it is difficult to start. This causes the motor to take a rush of current, which blinks the lights of a whole apartment or neighborhood. Sometimes these such results are caused by a poor motor or improper application of a good one.

Low power factor motors cost central stations a great deal more for engine capacity to run them. They take more engine capacity, the same as pails thrown loosely into a boxcar would take more car capacity than if the pails were carefully stacked into each other. A given car can carry a great many more pails if they are "stacked." A given generator and wires can carry a great deal more load if the motors have high power factor.

It is evident then that a machine can have such characteristics that it will cost the central station more than the business it produces. Naturally we like to know the characteristics of machines put on our lines. We even reserve the right to refuse service to a machine which causes too much disturbance.

The economic phase is the one which is by far the most important to us.

Many manufacturers think that washing machines, refrigerators and other appliances give the central stations this increase in revenue without added investment, but this is a mistake. True, we do not set another meter, nor open another account for appliances, but each of them adds its bit to the total load on our plants, and when you multiply these small loads by the hundreds of thousands of washing machines and thousands of refrigerators, they commence to demand considerable plant capacity, and investment in proportion.

Another thing, our product, electricity, differs from nearly every other product which is made and sold for public consumption, in that it must be manufactured and delivered at the very instant it is being consumed. This means that we cannot run overtime to store electricity for future sale and consumption, so if a customer wants engine capacity for even a few minutes, and at the time when most other people also want it, our engines must be bigger on his account. And when the few minutes are over we cannot sell our machines and regain our investment—it remains fixed.

If an automobile factory, or any other factory, is working to its capacity, and a further production is needed, they can work nights, thus avoiding increased machinery and added investment. When a central station is working to capacity and increased production is wanted, new plant capacity must be installed and a fixed investment made.

Many central stations now carry their highest loads in the day time. Refrigerators, washing machines and other appliances also work in the day time, and demand additional investment in central station equipment.

It is evident from the foregoing that we have a great deal more at stake in this domestic refrigerator business than the manufacturers of machines. Our investment is cumulative and grows in proportion to the number of refrigerators in the same way that the investment of refrigerator manufacturers would grow if they continued to manufacture but never sold a machine. Manufacturers would not want to do a business of manufacturing hundreds of thousands of machines and allowing the investment to accumulate unless they were very sure the machines could be made to earn a return by rental, but this is just exactly what central stations are compelled to do whether they want to or not.

Refrigerators and other appliances are built, sold and put on our lines and we must keep ahead of them with engine equipment. We are not even asked whether we think it a good investment or not.

If the refrigerators and other things put on our lines are satisfactory to their users the investment is good. If the machines prove unsatisfactory, we have an investment without an income. Our fixed investment is rented to a refrigerator user and rent is collected only when the machine is used. If it is unsatisfactory and unused we have an investment without a return. The refrigerator manufacturer sells his investment in the refrigerator. The money is in his pocket and all he has to worry about is his good name. Our investment is fixed forever and we must have a future.

So everything which concerns us with respect to a refrigerator or any other appliance has to do with its ability to satisfy its user and remain in use, because our existence depends on it. So we try to know in advance whether a machine is going to be satisfactory by learning its characteristics and quality beforehand, then after it goes on our lines we must see that it gets prompt and adequate service. If it is not available from the manufacturers we must give it or the machine will not earn for us. For this reason many central stations prefer to give free service to all appliances—and this is not unselfish but for self protection.

If machine builders will realize that the central station service can be seriously effected by the quality of their machines; that the central station must invest more than the cost of the machine to furnish engine equipment to run it; that this engine equipment cannot be sold but must be rented to the machine user; that rent is only available when the machine has proper service and remains useful, and that the central station's life depends on its satisfaction to the customer—if he realizes all these things he will have a better understanding of the central station attitude and viewpoint.

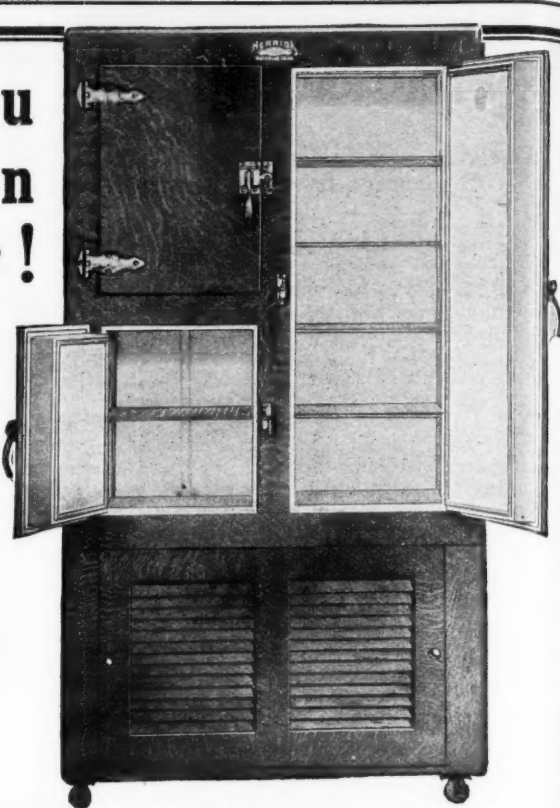
What you have been waiting for!

Herrick high quality cabinets for any standard electrical unit

The new HERRICK cabinets incorporate the identical features that have maintained HERRICK Refrigerator leadership for 37 years. In addition, they offer the utmost in smart, pleasing appearance at most reasonable prices. Beautifully finished quartered oak or white enamel cabinets and HERRICK low operating cost are sales features.

Ideal for every electric unit

Heavily insulated doors and walls—choice of three superior linings—extra heavy brass hardware nickel plated. Furniture finish.



Any electric refrigerating unit will give superior service in the Herrick. The Herrick is made for use with the cooling unit base or without it. Best of all, the Herrick cabinet sells quickly and wins enthusiastic praise from users. Write or wire for floor sample or catalog and complete information. Herrick Refrigerator Co., 1065 River St., Waterloo, Iowa.

Food keeps BEST in the HERRICK

THE ARISTOCRAT OF REFRIGERATORS

The Center of Interest at the N. E. L. A. Convention

FOLLOW the crowds at the Convention to the Kelvinator Exhibit! The talk of Central Station men all over the country is Kelvinator Model 272, Sealite Construction. A Cabinet Kelvinator complete for \$210. And none of the famous Kelvinator features of efficiency and reliability have been sacrificed to price. The same reliable freezing tank and the efficient thermostat control are included.

Only \$210! Overnight, a sweeping, nation-wide success! Sales are unprecedented. Building bigger, steadier loads in a twinkling. Loads free from trouble, worry or service—because it's Kelvinator.

Central Stations have always realized that Kelvinator is the type of electric refrigeration that safeguards public relations. Kelvinator numbers more Central Station dealer years than any other electric refrigeration. A special Utilities Division handles all Central Station business with the despatch and understanding of specialists.

You will want to see the Model 272—that is breaking all previous sales records. The greatest value in history! See, also, the complete line of Kelvinators for every electric refrigeration need, commercial and domestic. Each one as superior, for its price, as Model 272.

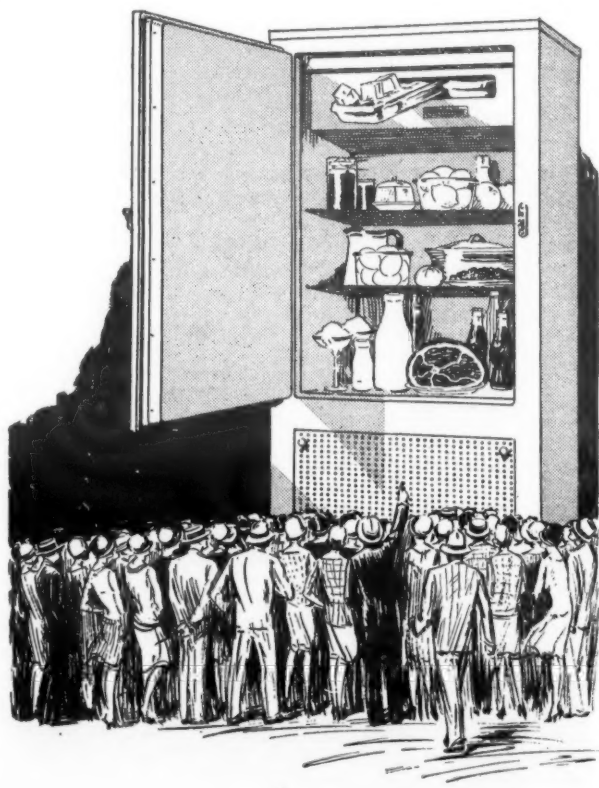
Kelvinator covers the whole range of electric refrigeration service. The low-priced Model 272; Cabinet Kelvinators with cabinets by Leonard; de luxe, solid porcelain Jewett refrigerators; Kelvinator freezing tank to fit your refrigerator. Correctly engineered commercial installations. Nizer Electric Ice Cream Cabinets and Milk Coolers.

Special Central Station Policy

- 1 Thorough service and sales training through Kelvinator Institute, and Factory and Field Schools.
- 2 Special Utilities Division to co-operate with Central Stations at all times.
- 3 Low servicing requirements assured by careful inspections and 24-hour running test (0.94 calls per unit per year is the average low service record).
- 4 Enlarged capacity afforded by \$3,500,000 new, modern plant insures prompt shipment of all machines and parts.
- 5 The only manufacturer in the field who can offer you a complete line for all types of electric refrigeration.
- 6 Liberal co-operative advertising and sales helps.

You'll find your friends at the Kelvinator Exhibit, for every Central Station man will make it a point to be there.

Kelvinator, 14205 Plymouth Road, Detroit, Mich., Division of Electric Refrigeration Corporation, Kelvinator of Canada, Ltd., 1148 Dundas St., East, London, Ontario.



Kelvinator

Oldest Domestic Electric Refrigeration

So near the Ocean it's called
The Breakers
So modern in equipment and well conducted it is known as one of the World's finest Hotels
So plan a Sojourn by the Sea and visit
The Breakers
ATLANTIC CITY
NEW JERSEY
JOEL HILLMAN President
JULIAN HILLMAN Vice President & Manager

Manufacturers Need Active Cooperation of Central Station

Machines Now Developed to Point of Dependability—Service No Longer Burdensome

By Howard R. Lukens, General Manager, Refrigeration Division, Welsbach Co., Gloucester, N. J.

An editorial appearing in *ELECTRIC REFRIGERATION NEWS* of March 2 discussed the present situation of a noticeable number of men formerly connected with the automobile industry now entering the electric refrigeration field and their apparent difficulty in understanding the attitude of the central station executives toward the industry and particularly their policy in relation to merchandising electric refrigeration.

The letter of M. E. Skinner, commercial manager of the Duquesne Light Company, Pittsburgh, which appeared in the March 30 issue, brought

out clearly that "the central station companies are trying earnestly to find the medium and methods whereby they can most successfully promote the electric refrigeration idea," and that "they would welcome the united expression of opinion from the manufacturers of electric machines as to how they could best proceed."

In the April 16 issue the article of H. E. Young, Northern States Power Company, Minneapolis, sets forth clearly that, "if we seem peculiar there are, in turn, peculiarities to our business." He outlined that "no manufacturer, distributor, agent or dealer need think that the electric light and power company industry is not quite as interested in the success of electric refrigeration as he is." Mr. Young cites past experiences as a reason for a degree of caution and points out the necessity for development being on a sound foundation.

It is self-evident that the central station has far more to gain from a widespread distribution of electric refrigeration than the manufacturer, distributor, or dealer, for with the latter group it is but a one-time, single-profit deal. A modern, properly designed and properly built quality electric refrigerator will go right on functioning for many years, building up just exactly the kind of current load that is most profitable to the central station.

The central station thus having a continuous and greater potential source of revenue, has the greatest financial interest and the greatest obligation. I believe this thought is shared by those in high positions in the electric light and power industry, but their failure to act as quickly and as forcefully as the manufacturer might wish is due to a caution brought about by a feeling that possibly, by their assuming the obligation and creating within their own organization the necessary activity for widespread distribution they might bring upon themselves a subsequent financial burden in the way of free service which would eat far into the revenue from the sale of current, if not eliminate it entirely. They have felt that this free service was necessary, for if merchandise with which they acquired greater load proved unsatisfactory to their customers, the relative loss of good will could not be offset by any possible immediate commodity sales profit.

I do not believe there is any sound reason for extensive free service beyond the installation or education period. Of course in the development stages of any industry there exists a demand for a rather liberal service policy. But as the period of development advances, and old structures are improved upon and new ideas introduced to cure fundamental difficulties, free service becomes less and less necessary until it is no longer burdensome on the manufacturer or distributing factors. I am confident that the answer to the free service evil that may have existed in the electric refrigeration industry, is at hand.

It is true that service difficulties were attendant on the early devices. In a great number of models the principles applied in large commercial ice machines were engineered down to the smaller capacity. Within the compass of this modified structure it was expected that pressures could be maintained, temperatures automatically controlled, etc., all without the attention or watchful eye of an experienced engineer, who was always present in the larger commercial plants. There was also lacking a proper co-ordination of all the elements involved in small unit construction.

But real success has been achieved. Engineering talent devoted itself to the development of small units, with recognition of the fact that to be successful electric refrigeration must be efficient, dependable and deliver an uninterrupted service at a low operating and service cost. This was not accomplished through extraordi-

Central station readers will be especially interested in the viewpoint of a manufacturer of electric refrigeration as expressed in this article by Howard R. Lukens, general manager, refrigeration division of Welsbach Company. It may be noted that Welsbach Company, with its forty years of successful manufacturing experience, has through its lighting, heating and refrigeration divisions, maintained at all times, a very close relation with public utilities, both gas and electric.

nary invention, but through careful research by skilled technicians well grounded in chemistry as it relates to refrigerants, gases, lubricants, metals, etc., in mechanics, in electrical engineering and in insulation and cabinet construction. Remarkable success has been achieved in all essential features, among which are generally simplified construction, neatness and compactness of design, ease of installation, quietness of operation, better electric motors, simple and positive automatic control, freedom from leaks, perfected lubricants, better insulation and longer life.

In those cases where central station men are giving this great development the serious attention that it deserves, they are asking how they are to choose wisely from the available field.

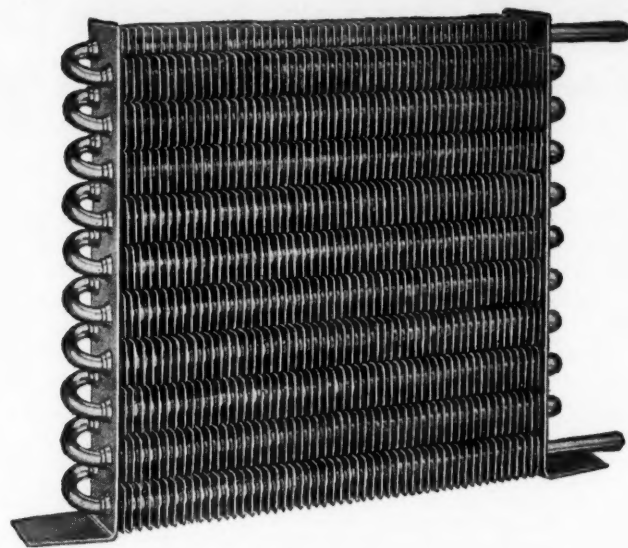
In talking with central station men, I have asked, "If a distributor placed fifty 'frigus maximus' electric refrigerators on your lines and the machine or its manufacturer failed, what would you do when those machines required service?" The answer is "Serve them." Granted you can't keep unreliable machines off your lines, but your companies can individually or collectively use exhaustive testing laboratory facilities, ascertain their characteristics and judge of their efficiency and dependability. By investigation you can also determine the reliability of the manufacturer and the soundness of his methods of manufacturing and distribution. You can handle one or more and recommend, by general display advertising to your public, those in which you can place trust. Owing to your interest through the load-building factor and your present facilities for handling deferred payments, you can lend financial assistance to the distributor or dealer of devices that have been approved.

There is a widespread public interest in electric refrigeration, but central station men must not be deceived in thinking that these load builders can be placed on their lines without aggressive merchandising methods. Those intensive specialty selling methods which have been found so successful in marketing a large number of high-priced appliances, must be used.

Electric refrigeration is the greatest potential producer of real revenue that has been made available to the central stations. The seasoned product of old, well-financed manufacturers, having passed your exacting laboratory test, is out of the experimental stage and deserving of your unhesitating support. If you make our selling problems yours, we will produce for you, and quickly, cheaper, simpler, even less-service-demanding, better electric refrigerators, because there never before was a better manned, more enthusiastic and determined-to-win industry than the one that today solicits your active co-operation for our mutual benefit.

MARCH EXPORTS OF ELECTRIC REFRIGERATORS

| Countries | Number | Refrigeration |
|--------------------------|--------|------------------------|
| | | Sets to 1 ton capacity |
| Belgium | 273 | 27,108 |
| Denmark and Fr. Is..... | 72 | 13,379 |
| France | 93 | 9,299 |
| Germany | 201 | 21,203 |
| Italy | 184 | 32,488 |
| Lithuania | 61 | 5,242 |
| Netherlands | 30 | 3,647 |
| Norway | 19 | 2,561 |
| Portugal | 1 | 695 |
| Spain | 28 | 6,825 |
| United Kingdom | 329 | 47,023 |
| Canada | 149 | 20,216 |
| Costa Rica | 3 | 805 |
| Panama | 4 | 820 |
| Salvador | 10 | 4,052 |
| Mexico | 56 | 11,724 |
| Bermuda | 15 | 2,153 |
| Jamaica | 1 | 427 |
| Cuba | 5 | 624 |
| Dominican Rep. | 2 | 431 |
| D. W. Indies..... | 2 | 1,595 |
| Haitian Rep. | 9 | 1,930 |
| Argentina | 4 | 781 |
| Brazil | 196 | 23,634 |
| Chile | 1 | 99 |
| Colombia | 5 | 1,122 |
| Ecuador | 2 | 460 |
| Peru | 2 | 922 |
| Uruguay | 1 | 485 |
| Venezuela | 20 | 6,370 |
| Aden | 2 | 160 |
| B. India | 6 | 1,332 |
| B. Malaya | 3 | 1,050 |
| China | 2 | 810 |
| Japan, inc. Chosen..... | 2 | 1,551 |
| Philippine Is. | 104 | 15,815 |
| Australia | 83 | 17,098 |
| N. Zealand | 32 | 7,985 |
| B. E. Africa..... | 3 | 623 |
| B. S. Africa..... | 26 | 7,639 |
| Egypt | 13 | 1,359 |
| Portuguese E. Africa.... | 1 | 415 |
| Total | 2,055 | 303,957 |

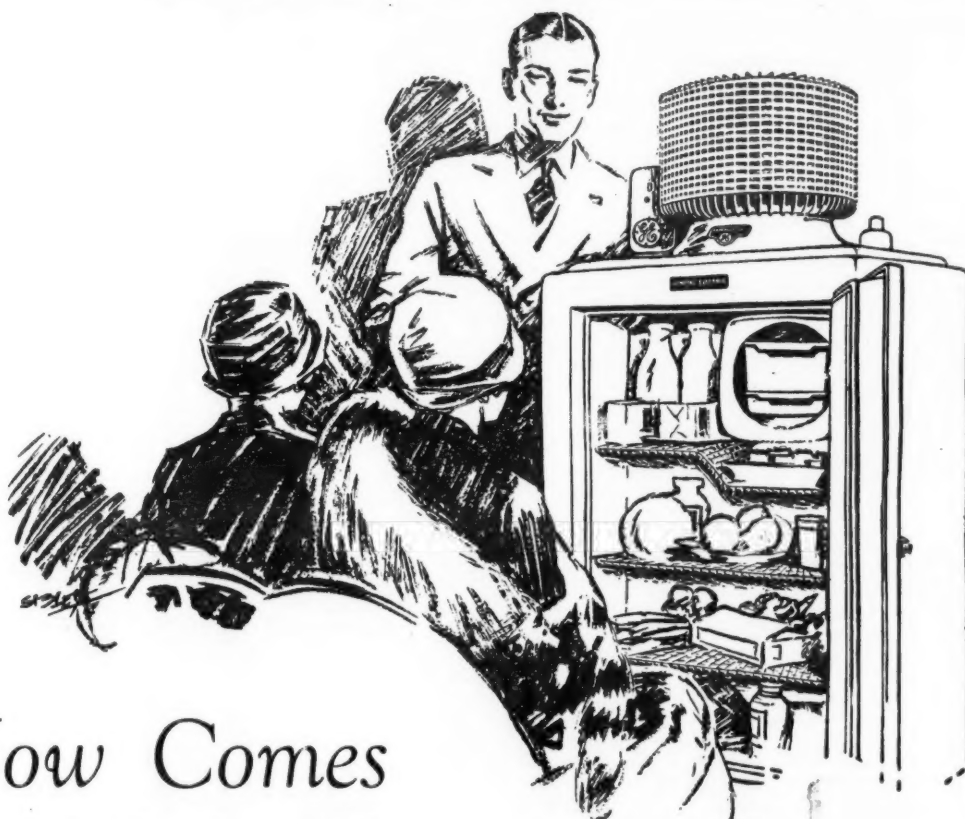


BUSH CONDENSERS

SEAMLESS COPPER TUBES
INDIVIDUAL FINS
MAXIMUM EFFICIENCY

The Bush Manufacturing Co.
Hartford, Conn.

White - Hanna
302 Lincoln Bldg., Detroit, Mich.



Now Comes Simplified Electric Refrigeration

After fifteen years of intensive research General Electric has put upon the market this new and remarkably simplified domestic refrigerator.

They have not only put it on the market, but they have put their name on it and their guarantee behind it.

It offers no problems of installation or service. All the moving parts are enclosed in one hermetically sealed casing that is merely lowered into the top of the refrigerator. No plumbing, no wiring, no assembling. It has no belts, fans, pipes or stuffing box to get out of order. Just plug it into any convenience outlet.

Dealers who are interested should address:

Electric Refrigeration Department
of General Electric Company
Hanna Building, Cleveland, Ohio

GENERAL ELECTRIC
Refrigerator

THE CREATION OF GENERAL ELECTRIC—LEADING ELECTRICAL RESEARCH ORGANIZATION OF THE WORLD



Patented—Springless Automatic

Builders of Distinctive Refrigerator Hardware for

Patented TRIPLOCK

Electric Refrigeration

WINTERS & CRAMPTON MFG. CO.
GRAND RAPIDS, MICH.

How Denver Utility Co. Sells Electric Refrigerators on Terms

Most Credit Applications Accepted—Court Proceedings Distasteful—Salesmen Make Good Collections

By John T. Bartlett

As numerous electric public utilities have undertaken the sale of electric refrigerators, study of the special credit and collection aspects of such distribution is pertinent. Earle O. Johnstone, manager of the collection department, Public Service Company of Colorado, Denver, supplies interesting figures.

In many communities a public utility has by far the largest number of large accounts, if taxes and water be removed from the equation. Denver has some 325,000 people, and the Public Service Company has about 100,000 accounts. The charge account business is comprehensive, instead of selective. With a deposit provision, if needed, a penalty for delayed payments and the right to discontinue service, the utility is in a very strong position as regards collections. It must use this strength, however, in a manner conducive to maintenance of maximum good will.

Contact regularly on lighting service doubtless contributes to success of merchandise collections. Here, again, however, public relations factor enters. A public utility, in forcing a completion of a contract for purchase of an electric refrigerator, cannot afford to be "hard boiled" in the sense that most others may be. Court proceedings are distasteful to public utilities, for apparent reasons. Very seldom will they appear in court against a debtor.

Nearly all applications for credit on merchandise of the Public Service Company of Colorado received are acceptable, Mr. Johnstone stated. The applicant's record with the company is considered, and primarily thereon is decision based.

What if it is found that the excellent prospect for an electric refrigerator, for example, owes the company a past due account? The credit will not be refused for that reason. Instead, the salesman will be given the chance to go out and collect the account from the customer.

"At first," related Mr. Johnstone, "we used collectors in such situations, and it would sometimes occur, naturally, that making an effort to collect the bill the collector spoiled the sale."

"Now, it is the salesman who goes out. A salesman is not a collector, and he gives the customer very tactful consideration. The prospective customer realizes it. We find that salesmen are very successful in collecting these past due accounts, and in handling these situations they clear the way for satisfactory relations." When a sale is at stake, salesmen make mighty fine collectors, Mr. Johnstone says.

In the company's experience, nearly everybody who wants to buy an electric refrigerator is in a position to do so, from the credit standpoint. The usual payment is 10% down. A \$300 sale, thus, would mean a down payment of \$30, with the balance, probably, paid out at the rate of \$15 a month.

The terms on electric refrigerators average about a year and a half.

Giving approximate figures, Mr. Johnstone estimated that 75 per cent of merchandise installment customers paid out readily. Twenty-five per cent are quite a bit of labor to the collection department. About 5 per cent compel the company to repossess.

Denver Credit Conditions

Work of the collection department of the Public Service Company of Colorado is undoubtedly one of the best barometers of general business in Denver. Activity has increased somewhat in recent months. In Denver business the past winter was not quite up to the mark. A heavy tourist season, considered by many a certainty because of the International Advertising Association conventions and other conventions in early summer, may easily raise business to normal.

A brief survey of the installment selling situation in Denver, made through the Retail Credit Men's Association, Industrial Bank, the court house and leading installment sellers, indicates some tapering off in general installment selling during recent months. Chattel mortgage registrations are an interesting commentary on the great expansion of installment selling. They rose in Denver from approximately 11,000 in 1914 to approximately 58,000 in 1925. In 1926 they dropped approximately to 56,500. Indications of the present year will show a similar decrease.

Charles M. Reed, secretary of the Retail Credit Men's Association; Ralph Pitman, secretary of the First Industrial Bank; and others, declare that installment sales are being made much more carefully and skillfully than two and three years ago. There is far more disposition than formerly, to be sure, to make a contract with a customer, that the latter will be able to carry out. Delinquency figures supplied by some of the leading installment houses show a sharp tendency downward.

Chattel mortgage extensions, which in 1914 amounted to 3,405, dropped to 1,490 in the year 1926, despite the enormous increase in installment business. The conclusion cannot be escaped that installment business involving chattel mortgages is being conducted in a much more efficient and business-like manner than it was ten years ago.

One of the factors contributing to healthy installment selling of electric refrigerators in Denver and in many other

communities is the improved credit association facilities available. These associations are accomplishing a tremendous good in systematizing retail credit, and ridding it of abuses. In Denver, for example, the association has upwards of 300,000 cards now. Upon many are reports by 10 to 20 different concerns. It is comparatively easy to ascertain whether or not a customer is entitled to an extended installment credit. Right now, through the good work of the credit association in Denver, there are several thousand consumers who cannot, generally speaking, obtain retail credit anywhere. They are working their way out of so-called "hopeless" situations into which they got themselves. Until they have re-established their credit, they cannot obtain it, and instead must pay off old obligations.

So far as Denver is concerned, it appears that the vast surge into installment selling, which rolled up enormous volume, with annual new high totals, for ten or more years, has reached a temporary peak. The same is true, probably, of a considerable number of other communities. Observable at the same time is marked improvement in the average efficiency of installment selling. Retail credit machinery is far ahead of what it was five years ago.

The great sales drive on behalf of electric refrigerators gets under way then at a moment to profit extensively from installment selling experience of the past ten years. Talking with numerous Denver credit men, the representative did not find one who saw anything unhealthy in the situation.

OUTLINES ACTIVITIES OF N. E. L. A. COMMITTEE

By H. E. Young, Chairman Electric Refrigeration Committee

It is difficult to say anything about electric refrigeration without repeating what has already been said.

Likewise it is difficult to organize a committee program and make sure that it will really accomplish something of real value to our industry.

At the outset the committee decided that any kind of a report which could be got up would probably be out of date before it was printed. We realized that things were moving too fast in the refrigeration field for any kind of a report to keep up with them.

After a number of lengthy discussions, opinions seemed to crystallize as to what the industry needed—namely, information up to the minute.

We want to introduce electric refrigeration as rapidly as possible. We want to know how to do it. We want to make sure that what we do is right. We want to make no mistakes if we can help it.

On the other hand, we do not want to stand idly by where there are such great opportunities for additional business just because we must have everything proved to the last degree.

We are willing to take a reasonable chance, but, on the other hand, we are entitled to a reasonable amount of assurance that we are doing the right thing.

All these questions require information. Information from every possible source. Information on every phase of the subject.

Our committee, therefore, and our program is organized along the lines of disseminating up-to-date information. Also we do not stop at disseminating information, but inspire articles, data, facts, figures, written experiences, etc., which will result in the right information being got into print.

For this purpose the committee is divided into eight sub-committees, each of which is charged with the responsibility of getting into print subject matter with which their committee deals.

Each sub-committee is to get in touch with every source of information, every authority which is in a position to get up something in shape for publication on the subject in question.

These articles and information are to be published in the regular trade press.

In addition to these eight sub-committees there is a Bulletin Committee, whose duty consists of going over all the printed matter on all subjects relating to electric refrigeration and digesting briefly the articles for a monthly bulletin to be issued to those in the industry especially interested in electric refrigeration.

CENTRAL STATION MANAGER DEVELOPS SMALL TOWN TRADE

By Clement White

C. M. Belknap, manager of the Kansas Power & Light Corporation's sales room at Marysville, Kansas, is making special effort to popularize electric refrigerators. Marysville has about 4,000 population, and is an important trading center for farmers. Mr. Belknap finds newspaper advertising, attractive display and painstaking demonstration are of maximum value for stimulating sales in his territory. He advocates electric refrigerators in a newspaper which goes into most of the farm homes in his territory, as well as "covering" the town. He uses specific copy, which explains just what electric refrigeration will accomplish, and why it is most economical and practicable for general use. He also makes a point of arranging attractive displays in his sales room and in the show window.

During Home Beautiful Week at Marysville, when local retailers displayed their wares in Marysville's model home, Mr. Belknap's merchandise display was a center of interest to thousands of town and rural prospects. He believes in getting the merchandise before the public at every opportunity.

Mr. Belknap stresses service. He finds the prospect who is conversant with the fact that electric refrigeration is a success, is the easiest customer. He is educating prospects to the fact that each electric refrigerator sold by his firm must give satisfaction. He makes a point of stressing service for patrons at every opportunity.

A. J. Deer Company to Market Electric Refrigerator

It is reported that the A. J. Deer Company, Hornell, N. Y., is planning to place an electric refrigerator on the market shortly.

Electric Refrigeration

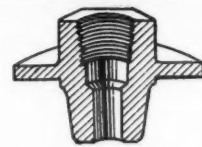
Pumps and Float Controls

WE specialize in building pumps for household refrigeration, ice cream cabinets, display cases, clubs and anything up to two tons capacity. We also manufacture a float control evaporator. Our engineering service is at your disposal to help you with your units. Our factory is in a position to manufacture any parts of your equipment in quantity. Bids cheerfully given upon receipt of blue prints.

Write for Details

DUNNING PUMP & MFG. CO.

326 WALNUT STREET PHILADELPHIA, PA.



Hot Die Pressed Forgings

Valve bodies, tees, elbows, evaporator headers,—anything in the line of brass parts made to your specifications. Rough forgings only. The largest producers of refrigerator forgings in the country.

Send your specifications direct to

ROME MANUFACTURING COMPANY, Rome, N. Y.

Factory Representatives, F. B. Riley and Associates, 320 Beaubien St., Detroit, Mich.

Circulating Pumps

The Palmer Direct Connected Centrifugal Pump is the result of long contact with the requirements of the refrigerating machine industry. Compact, efficient, quiet, sturdy,—an ideal pump for brine circulation in sizes of ½ to 1 h. p. and normal delivery of 2 ½ to 25 gals. per minute.

Factory Representative
F. B. Riley and Associates,
320 Beaubien St., Detroit, Mich.

Made by PALMER ELECTRIC COMPANY

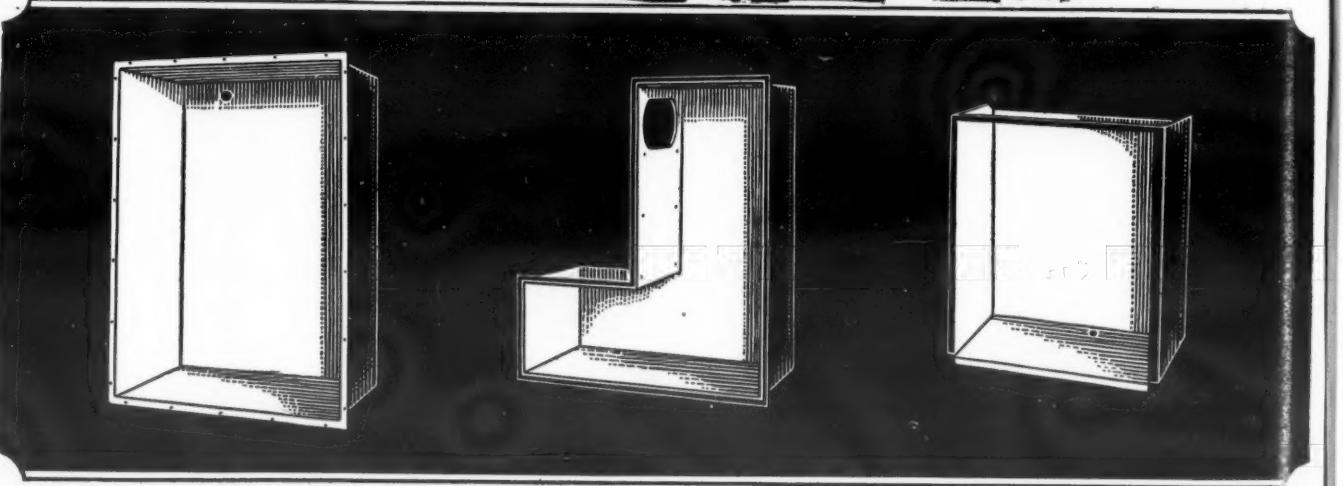
1258 Park Place, Detroit, Michigan

Standard for Years in Refrigerator Cabinets of Leading Manufacturers



Fusing Crysteel Porcelain Enamel on Armco ingot iron shapes.

Crysteel



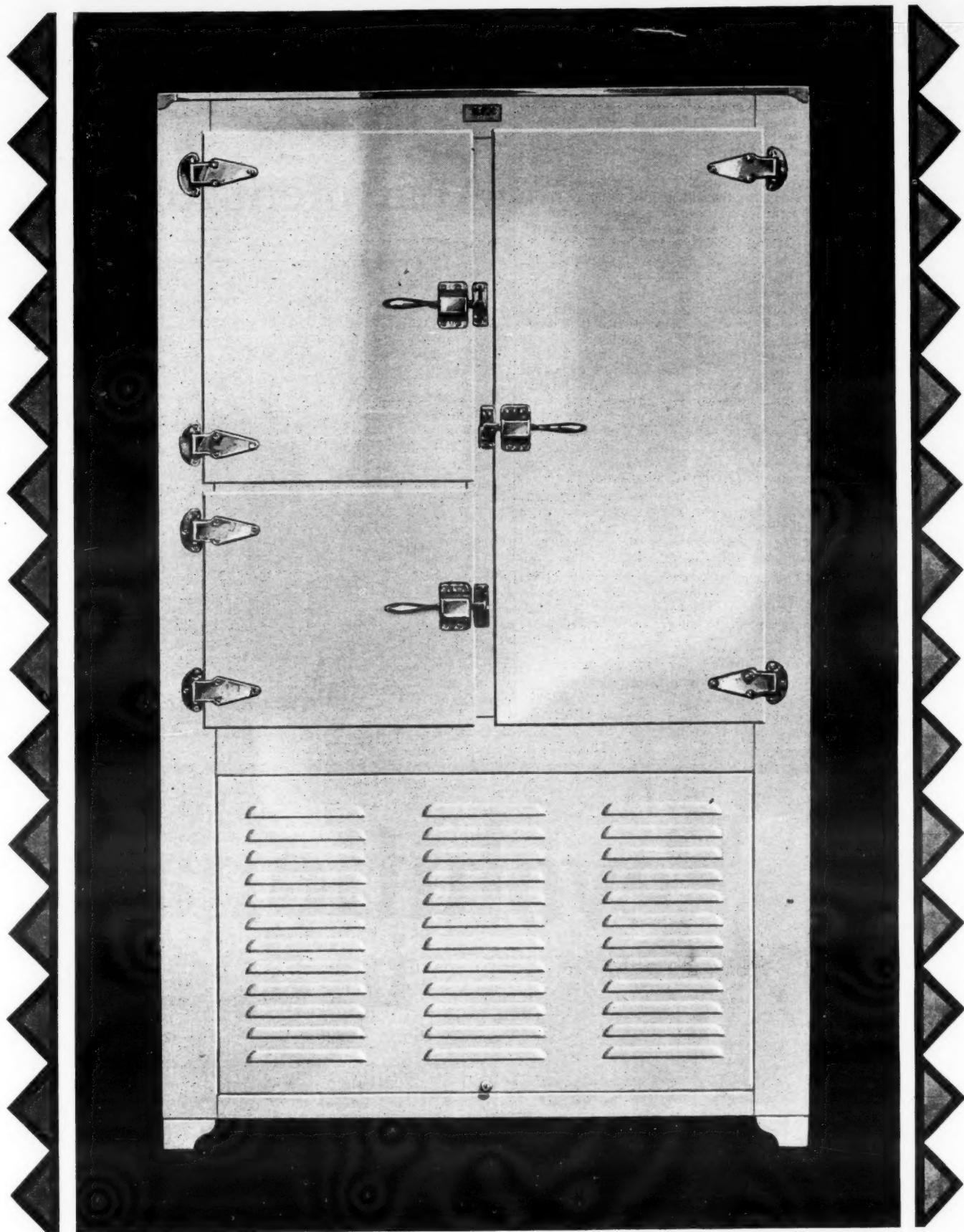
Benjamin Refrigerator Linings

The Crysteel Works of the Benjamin Electric Mfg. Co., offers to manufacturers of refrigerators an unsurpassed service which includes:

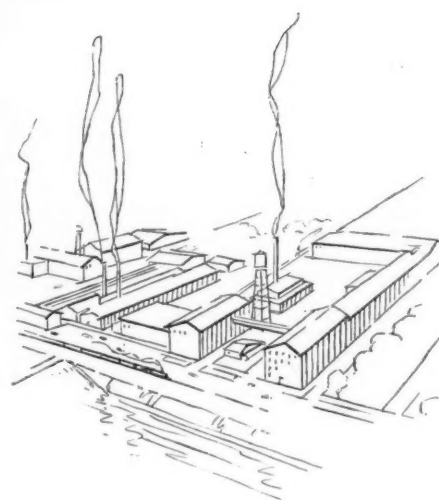
- 1 Years of experience in the correct FABRICATION of porcelain enameled parts and particularly in the production of seamless, one-piece, refrigerator linings.
- 2 Linings, the QUALITY of which is unquestioned and with a FINISH acceptable to the most discriminating buyer of high class merchandise.
- 3 ALIGNMENT of linings so precise that when linings are properly assembled to frame breakage is reduced to a minimum.
- 4 Long experience in PACKING porcelain enameled shapes insures safe arrival at refrigerator manufacturer's plant.
- 5 Railroad facilities permit loading directly on cars, without trucking.

Correspondence is invited regarding our facilities for handling production of any magnitude

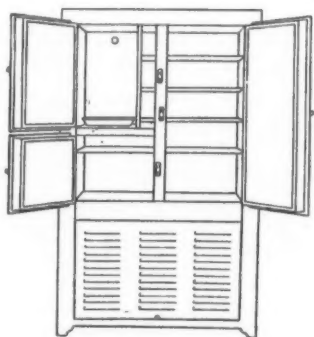
Crysteel Works
of BENJAMIN ELECTRIC MFG. CO.
120-128 S. Sangamon St.,
CHICAGO



The REXBURN Model



Rex Factories
Connersville, Indiana



THE advantages of specialized manufacture were never more clearly exemplified than in the superior quality of Rex metal cabinets for electrical refrigeration—Rex's sole product in the refrigerator field.



ICE MEN AWAKENED BY MACHINE COMPETITION

Public Attention Focused on Refrigeration Stimulates Ice Business

John Nickerson, publisher of *Ice and Refrigeration* and long-time leader in the ice industry, believes that electric refrigeration development will bring about important advancements in the ice business and will result in a great expansion of the industry. The following comments are extracted from a paper by Mr. Nickerson read before the Pennsylvania Ice Producers' Association convention held in Philadelphia, March 30 and 31:

"The ice industry today, in my opinion, is on the eve of its greatest expansion. Its growth has been so quiet and so gradual that it has hardly been noticed. But lately new and vitalizing forces have been stirred up that seem destined to have a profound influence on the future. Under the influence of new competition, ice men have awakened to the need of revising their methods and setting their houses in order.

"This program is going to require financing and on a scale of such magnitude that the industry will not be able to carry along solely out of profits. It will be necessary to go to the public for new capital, and to accomplish this successfully it will be necessary to lay the foundations whereby public confidence in the industry will be assured.

Obstacles to Public Confidence—Engineering Skill Needed

"There are several obstacles, as I see it, which the ice industry must overcome in order to establish its credit with the public on a large scale in order to finance its expansion to a rank which the importance of its service and the merit of its product warrant that it should assume. To enumerate, these are: operating economies in manufacture and distribution; expansion of the ice market.

"Developments along these lines have taken place in practically every other industry. It has been necessary to constantly revise methods of doing business to keep abreast of the times and to maintain satisfactory earnings.

"Ice manufacturing plants in general are extremely wasteful, principally because sufficient attention has not been paid to manufacturing costs. There is opportunity for expert engineering skill to provide means whereby manufacturing costs may be reduced. There are many plants today with machinery that makes it possible for them to compete successfully on a cost basis with other plants.

"Many ice companies have contented themselves with the idea of producing and selling more ice with the result that in many communities there is an over-production or at least too much manufacturing capacity. The result of this is cut-throat competition and price wars with an attendant dwindling in net profits for all engaged.

"This is one of the ways whereby the ice industry can take steps toward establishing public confidence—by setting its house in order so far as production costs are concerned and by establishing a standard of ethics within the industry regarding trade development. This is distinctly a problem for ice men and engineers to work out and it is a very important thing to accomplish. Reduce production costs and stop price wars. Two very important ways whereby profits may be increased.

"It is very encouraging, indeed, to hear that the National Association of Ice Industries has succeeded in raising its \$200,000 fund for advertising the use of ice. It is well, indeed, for the ice industry to recognize that it can no longer wait for the public to knock at its door. The ice man must follow the lead of other industries, and energetically promote general use of his product. It is a problem in modern merchandising. It is estimated that there are several hundred uses for ice and ways and means should be devised to acquaint the public with these uses and promote acceptance.

"Another thing to keep in mind in the ice industry is the present seasonal character of the business. I understand that the average ice plant does not operate more than 150 to 200 days in the year, which would give it a load factor of less than 50 per cent. It is obvious that every effort should be made to increase this load factor by prolonging, through advertising, sales campaigns, etc., the normal ice season. I understand that certain companies have been very successful in doing this by instituting intensive campaigns in the

Ice Interests Benefit by Electric Refrigeration Propaganda

By Paul Lorch, Refrigeration Representative, Plant and Power Bureau, New York Edison Company, Bronx District, New York City

It might be of some encouragement for ice manufacturers to know that the advent of household electric refrigeration has brought about a condition which is a distinct advantage to their industry.

Everybody seems to be talking B. T. U.'s and corkboard. Technical refrigeration terms are becoming household words. This same condition was true of radio, with the result that the radio eventually found its way into almost every home. The 5 and 10 cent store load-ups did not diminish the sales of the completely assembled sets. This placed the radio within the reach of everyone and was the means of making possible the ownership of the great pleasure-providing equipment and in that way created the desire for the more expensive and better constructed sets.

Of course, it is understood that many people will unhesitatingly spend more money for pleasure-providing equipment, yet will hesitate and thoroughly investigate the merits of any machine or device which "merely" renders a service such as saving labor or safeguarding the health.

Let us picture the vast army of salespeople representing the many manufacturers, dealers and public utilities, all over the country, talking refrigeration. This ceaseless propaganda concerning the safeguarding of health through the proper preservation of food is causing people to think and investigate. They are surprised to learn that the refrigeration of food from the time it is gathered to the time it

fall and early spring, and in this way they have been able to come to their peak business somewhat earlier than usual and have been able to prolong the normal season somewhat later.

Ice Peddlers Create Dissatisfied Customers

"Another means of increasing the volume of sales in an ice plant is through establishing delivery systems as against the general practice of selling wholesale to peddlers. The fallacy of doing business with peddlers is too well known to deserve much comment. The public has come in contact with the ice industry through peddlers, who, in most cases, are unappreciative of the value of giving service. Irregular deliveries, short weight ice, carelessness in placing ice in refrigerators, and many other objectionable features of peddler service have made more dissatisfied customers and more potential prospects for electrical refrigeration than all the advertising that will ever be done by electrical machine manufacturers, and furthermore have gone a great way in harming the credit of the industry. The peddler has probably had a great deal to do with creation in the public mind that the ice business is a seasonal enterprise because concentrated efforts have not been directed towards stimulating sales during the cold season.

Sales Manuals for Delivery Men

"The education of employees and particularly of delivery men is an important part of any merchandising program. I know of two companies which have recently prepared elaborate sales manuals for their employees and are impressing upon their men that each delivery man is a salesman. They are sending their men through a regular training course, instructing them in principles of salesmanship and giving them information about ice and its uses. They do not want the old type delivery man. What they are looking for is ice salesmen on their delivery wagons.

"From the information we have been able to obtain, electrical refrigeration has apparently done no harm to the ice industry so far as the production and sale of ice is concerned. Undoubtedly there is a field, and a broad one, for the small mechanical refrigerator, and I do not take lightly its possibilities as a competitor to the ice man. Some very large concerns are already established in the business. They have ample capital and a reputation for previous successes in other lines of endeavor. You can depend upon it that a thorough test of the mechanical machine is to be given.

Electric Refrigerator a Significant Contribution

"The electric refrigerator has made a significant contribution. It has focused public attention on the importance of

reached the neighborhood store frequently represents the large portion of its cost. The suggestion that all the expense and care to prevent the decomposition of food is undone when it is placed in the musty, warm and dripping household icebox, is the point that breaks the spell of sentimentality for the old family icebox. Their minds run over those words, musty, warm and dripping, many times and the explanation of how those troublesome B. T. U.'s are held back by corkboard construction, actually holds their interest.

Not everybody can afford an electric refrigerator, but they are surely going to insist upon good insulation when they buy iceboxes. What has this demand caused among storekeepers? You don't find several slapped-together non-insulated iceboxes lined up on the sidewalk in front of the housefurnishing store. People laugh at these now, and will only make their purchases from the store where a certain make of refrigerator is featured in the window, conspicuously displaying the name of the maker and the type of insulation.

You ask how does all this benefit the ice manufacturer? My observations have convinced me that the spread of refrigeration propaganda has benefited the ice industry as follows:

- (1) People who cannot afford electric refrigerators are buying better iceboxes, with provision for more food storage space, consequently more ice is needed.
- (2) People who never before used ice

refrigeration and it has aroused the ice industry to the long recognized necessity of setting its house in order. We are beginning to get action."

and are now buying iceboxes. This now opens a new field for the manufacturer.

(3) The propaganda directed against too cold and varying temperatures is making the use of "window refrigerators" unpopular.

In conclusion, I would like to add that

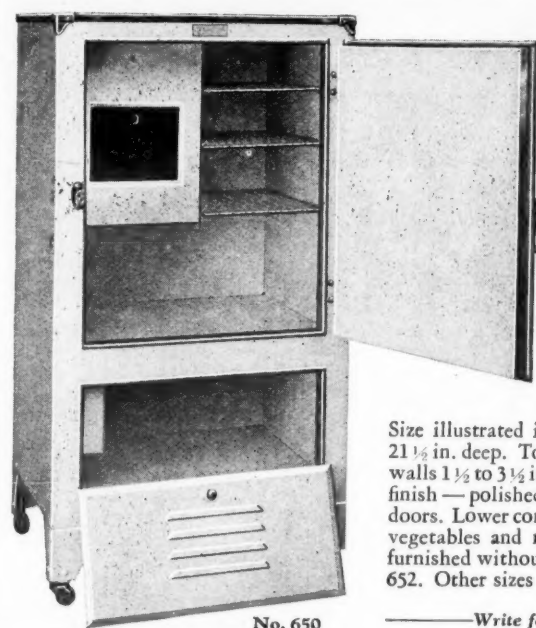
the constructive refrigeration propaganda sanely directed with a friendly regard for all types of electric refrigerators, will prove a distinct benefit to the ice manufacturer in large cities, where multitudes of people feel that they cannot even afford the use of ice.

Crystal and White Steel

Apartment Refrigerators

for Remote Installations

Are going into apartment homes all over the country



Multiple hook-ups require an efficient steel refrigerator like the "Crystal" or "White-Steel". You cannot afford to experiment with unknown makes. We have been making steel refrigerators exclusively since 1910.

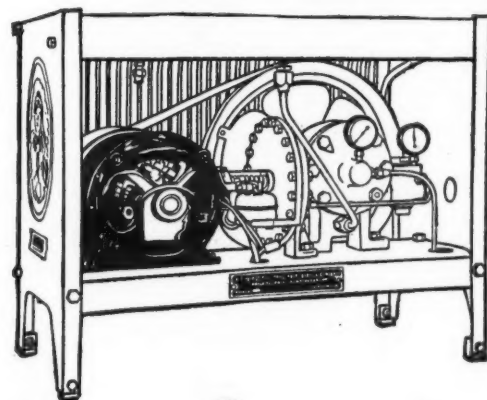
Size illustrated is 50 1/2 in. high, 26 1/2 in. wide, 21 1/2 in. deep. Total interior 6 1/2 cubic feet. Cork walls 1 1/2 to 3 1/2 in. thick—white or gray lacquer finish—polished aluminum trim—gaskets on doors. Lower compartment (not refrigerated) for vegetables and miscellaneous storage. Can be furnished without lower compartment—our No. 652. Other sizes up to 20 cubic feet.

No. 650

Write for Catalog and Prices

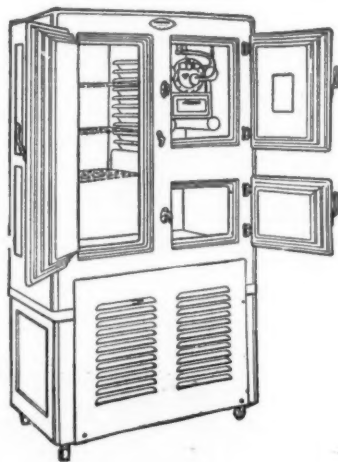
CRYSTAL REFRIGERATOR CO., Fremont, Nebr.

Revolutionary in design



Amazingly simple ~and it's quiet

The crisp dry cold of a frosty night



THE quiet IROQUOIS employs the most simple, noiseless and trouble-proof mechanical equipment ever designed for electric refrigeration. It has many revolutionary features.

Quiet Operation: Rotary type compressor instead of usual piston type. No noisy intake valves.

Low Operating Cost: Requires less current. Costs even less than ice in many localities.

No Troublesome Thermostat: Has automatic pressure-controlled switch. Absolutely trustworthy.

Safe Refrigerant: Non-poisonous, non-corrosive, absolutely safe. Chances for leaks reduced to a minimum.

No Brine Tank: Direct expansion coil in cooling unit. More room for food—better circulation of air—more sanitary.

You owe it to yourself to investigate the quiet Iroquois.

DISTRIBUTORS: The Electric Refrigerator Industry is growing rapidly. In a few years it will prove one of the major industries of the country. To distributors who can qualify, an exclusive distributor arrangement for selling Iroquois should prove profitable. Now is the time. Write us for complete details.

IROQUOIS

REG. U. S. PAT. OFF.

ELECTRIC REFRIGERATION

IROQUOIS ELECTRIC REFRIGERATION COMPANY, 1600 Arch St., Philadelphia
Associate of The Barber Asphalt Company

ANHYDROUS SULPHUR
DIOXIDE

Absolute Protection for Refrigeration

ANSUL CHEMICAL COMPANY
MARINETTE, WIS.

SELLS OLD BOX FOR CUSTOMERS THROUGH CLASSIFIED ADS

Gets Good Results By Using "Household Goods for Sale" Section

By F. F. Haynes,
The Electric Equipment Co., Frigidaire
Distributors, Davenport, Iowa

In reply to your request in the April 27 issue of ELECTRIC REFRIGERATION NEWS for advice on the turn-in problem:

We are a young industry and will profit by the experience of the automobile industry and the dealers by avoiding the trade-in of used iceboxes by a little forethought.

We should study and know our product so well that our prospect will realize and appreciate the need for same, and the icebox will be secondary.

My greatest success in handling this situation, is to receive the customer's order for the desired size and to enlist my service in the disposal of same by placing a well-planned ad in local newspapers in the "Household Goods for Sale" section. I have received as many as twenty telephone calls in one evening from one insertion, and also built up a prospect list for new sales, as well as used.

When there is an allowance made for the old icebox, very often it is permitted to remain in your warehouse or salesroom and is never as quickly disposed of. The result is we can tie up many hundreds and perhaps thousands of dollars of our profit, which is not a healthy condition.

11 MACHINES TO BE SHOWN AT ST. LOUIS SHOW

Eleven electric refrigeration manufacturers will exhibit in the electric refrigeration show of household units to be held under the auspices of the Union Electric Light and Power Co., of St. Louis, in their showrooms for the five days commencing with Tuesday, May 31.

The manufacturers of the following units have already signified their intention of being represented at this exhibit: Universal, Servel, Champion, Frigidaire, Absopure, Kelvinator, Sure Cold, Ice Maid, Iroquois, Norge and Copeland.

N. E. L. A. PROGRAM

(Continued from 1, Column 5)

Address, "Electrification of Agriculture," G. C. Neff, chairman rural electric service committee.

Address, "What Electricity Means to the Farmer," M. L. Noon, director American Farm Bureau Federation.

Address, Mrs. Haris T. Baldwin, chairman living costs committee, National League of Women Voters.

THURSDAY, JUNE 9, 9:30 A. M.

Report of prize awards committee, W. H. Onken, Jr.

Report of lamp committee, Frank W. Smith.

Report, W. B. S. Winans, chairman Accounting National Section.

Address, "A Citizen Wherever We Serve," P. S. Arkwright, president Georgia Power Company.

Address, Mrs. Mary King Sherman, president General Federation of Women's Clubs.

Address, Charles Edwin Mitchell, president National City Bank of New York.

Address, "Electricity the Slave of the Lamp," Bancroft Gherardi, president American Institute of Electrical Engineers.

THURSDAY, JUNE 9, 2:30 P. M.

Report, "N. E. L. A. Educational Courses," Fred R. Jenkins, chairman educational committee.

Address, "A Message from the Sales Managers," Earl Whitehorse, commercial editor *Electrical World*.

Address, "Co-operation for Service," J. A. Fowler, past-president Association of Electragists International.

Address, C. F. Hirshfeld, chairman Engineering National Section.

Address, "We Are Nowhere Near Saturation," R. M. Searle, president Rochester Gas & Electric Corporation.

Address, "Merchandising," D. F. Kelly, president "The Fair," Chicago.

Address, "Electricity in Industry," William Green, president American Federation of Labor.

FRIDAY, JUNE 10, 9:30 A. M.

Memorials, W. H. Onken, Jr.

Address, "Insurance in the Electrical Industry," G. H. Bourne, chairman insurance committee.

Address, "Public Utility Advertising," W. H. Hodge, chairman advertising committee.

Awards Hurley merchandising prize contest, Edward N. Hurley.

Address, G. E. Cullinan, Jr., chairman co-operative relations committee, Electrical Supply Jobbers' Association.

Address, Albert C. Ritchie, Governor of Maryland.

Appreciation, Arthur Williams, vice-president New York Edison Company.

Election of officers.

ROME MFG. COMPANY TO MARKET MACHINES

The Rome Mfg. Co., Rome, N. Y., well known in the electric refrigeration industry as manufacturers of refrigerator forgings, have announced that they are now manufacturing complete commercial electric refrigeration units. "These are now being manufactured in one of our plants, here in Rome, and we are actually in production, having already placed several installations," G. F. R. Wheat, manager of the forging department, stated.

Wagner to Show New Line of Motors at N.E.L.A. Convention

Wagner Electric Corp., have announced that they will have their first public showing of a new line of air jacketed motors, at the N. E. L. A. convention at Atlantic City. These motors are particularly suitable for service in dusty and damp places and where the air contains acid and alkali fumes.

Conditions In Iowa and Nebraska Good, Says Universal Cooler Sales Manager

Conditions in Iowa-Nebraska territory are very good, according to A. deB. Gaines, sales manager for the Universal Cooler Corp., Detroit. Mr. Gaines has just returned from a visit to The McGraw Company, the Universal Cooler distributor for that section, visiting their offices in Omaha, Sioux City and St. Louis.

The McGraw Company has operated for many years in this territory, covering an area of about ten thousand square miles, and are therefore in a position to gauge their sales possibilities quite accurately. Mr. Gaines regards the report from the McGraw Company as a valuable basis for demonstrating the possibilities for electric refrigerator sales through jobbing distributors.

"Causes of Food Spoilage" Offered in Booklet Form

In response to the many requests which have been received for reprints of the article entitled, "Causes of Food Spoilage," by C. F. Ryan, Jr., and J. F. Hendrickson, published in a recent issue of ELECTRIC REFRIGERATION NEWS, arrangements have been made to supply copies of this article in attractive booklet form suitable for distribution to the public. The cost of the booklet will be \$10.00 per hundred, and orders will be filled for any quantity desired.

Public Policy Committee

WEDNESDAY, JUNE 10, 8:30 P. M.

Report of Charles A. Coffin prize committee, R. F. Pack.

Address, "Charles A. Coffin medal," Report of public policy committee, R. H. Ballard.

Address, David F. Houston, former Secretary of the Treasury.

(This session, which will be broadcast, will be interspersed with music by George Olson and orchestra and Mario Chamlee, Metropolitan Opera tenor.)

Commercial Session

TUESDAY, JUNE 7, 2:30 P. M.

Address, J. E. Davidson, chairman Commercial National Section.

Committee Reports: Commercial cooking, A. M. Lloyd.

Competitive power, H. W. Derry.

Customer relations, R. T. Duncan.

Address, "Why We Should Sell Electric Ranges," John V. Strange, Carolina Power & Light Company.

Committee Reports: General merchandising, C. E. Greenwood.

Industrial heating, W. H. Sammis.

Industrial lighting, Joseph F. Becker.

Home lighting, C. L. Dunn.

Address, "Electric Refrigeration," Ell C. Bennett, editor *Electric Light & Power*.

Committee Reports: Transportation, L. M. Branch.

Water heating, H. K. Griffin.

Accounting Session

TUESDAY, JUNE 7, 2:30 P. M.

Address, W. B. S. Winans, chairman Accounting National Section.

Committee Reports: Classification of Accounts, W. J. Meyers.

Customers' records, J. F. Ford.

Committee Reports: Women's, Miss Sophia Malicki.

Industrial relations, Homer E. Niesz.

Information Bureau organizations, H. C. Abell.

Manufacturers' advertising, T. J. McManis.

Public speaking, W. S. Vivian.

Relations with financial institutions, M. S. Sloan.

Entertainment Program

MONDAY, JUNE 6—President's reception; Olsen's Orchestra; dancing.

TUESDAY, JUNE 7—Cards; dancing.

WEDNESDAY, JUNE 8—Ladies' Sea-view Day; golf, croquet, etc.

THURSDAY, JUNE 9—Afternoon,

opera; evening, Convention Golden Jubilee; dancing.

Address, "Broadening the Accountant's Duties," C. L. Campbell, Connecticut Light & Power Company.

Committee Reports: Fixed capital, M. R. Scharff.

General records, J. H. Bissell.

Address, "Eliminating Waste Through Simplified Practice," Ray M. Hudson, chief Division of Simplified Practice, Department of Commerce.

Committee Reports: Purchasing and storeroom, E. S. Brock.

Statistics, H. A. Snow.

Address, "Some Major Accounting Problems," Norman E. Webster, vice-president New York State Society of Certified Public Accountants.

Engineering Session

TUESDAY, JUNE 7, 2:30 P. M.

Address, C. F. Hirshfeld, chairman Engineering National Section.

Committee Reports: Accident prevention, K. R. MacKinnon.

Electrical apparatus, H. R. Woodrow.

Engineering administration, A. C. Marshall.

Hydraulic power, H. L. Doolittle.

Address, "Today's Science and Tomorrow's Engineering," L. A. Hawkins, General Electric Company.

Committee Reports: Inductive co-ordination, J. C. Martin.

Meters, A. G. Turnbull.

Overhead systems, H. C. Sutton.

Prime movers, A. D. Bailey.

Underground systems, C. H. Shaw.

Public Relations Session

TUESDAY, JUNE 7, 2:30 P. M.

Address, W. A. Jones, chairman Public Relations National Section.

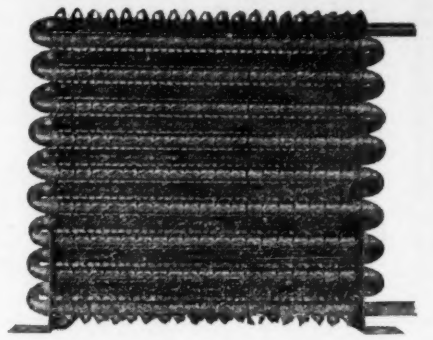
Committee Reports: Co-operation with educational institutions, Carl D. Jackson.

Customer ownership, P. G. Gossler.

Address, "Dollars and Friends," J. E. Davidson, vice-president Nebraska Power Company.

"Air-Way" Condensers

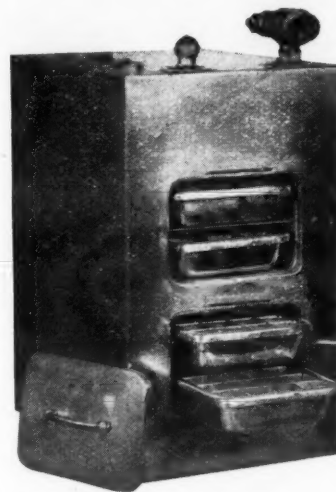
Any size, any capacity. They look and act the part. The "AIR-WAY" condensers are made to meet the requirements of any equipment. They are highly efficient, keeping head pressures remarkably low. You will like them and the price is right.



Brine Tanks and Expansion Valves

An experience gained by making many thousands of brine tanks for one of the three largest Manufacturers of Machines is expressed in our new standard line of BRINE TANKS and EXPANSION VALVES. We can meet your requirements in standard tanks in any cabinet from 4 to 40 cubic feet,—any refrigerant.

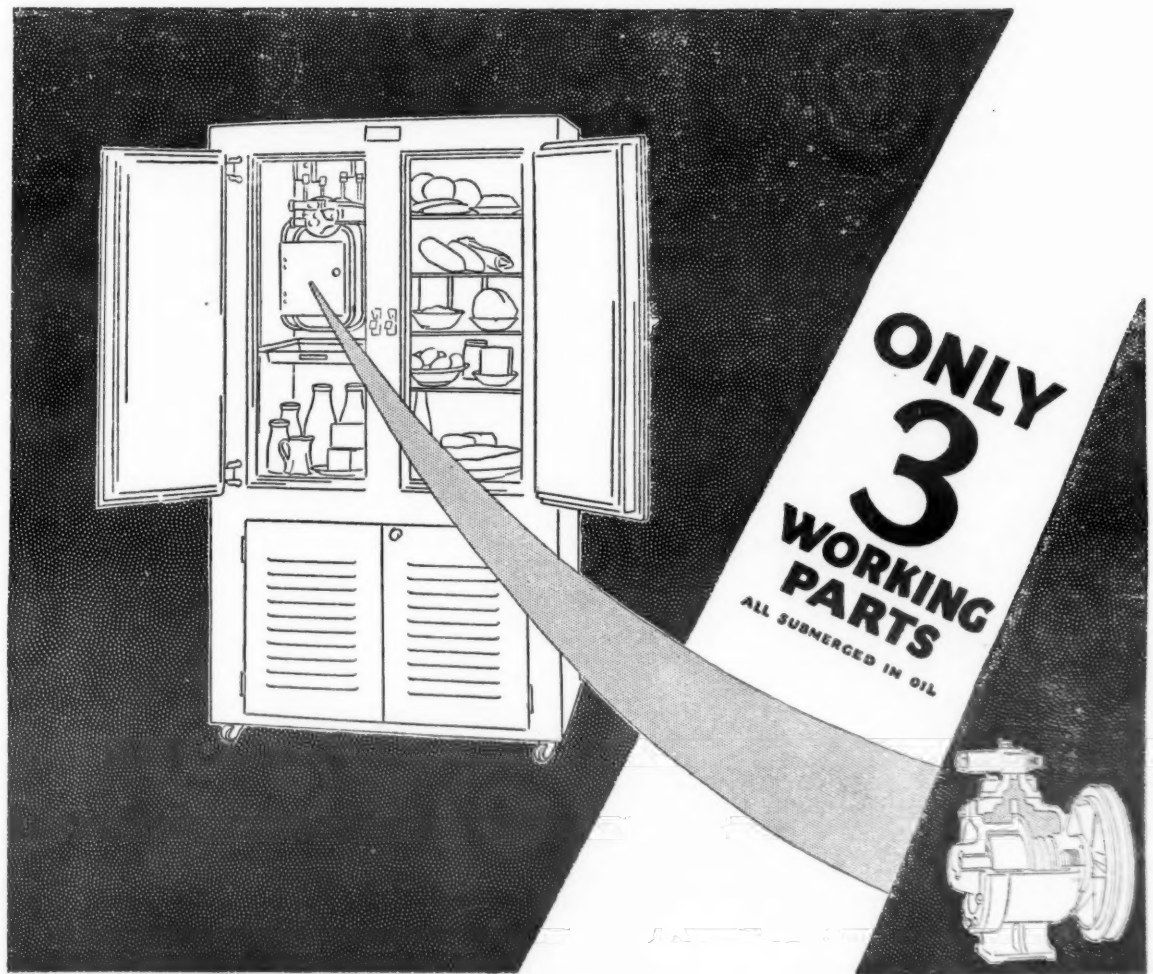
Ask for our bulletins on these appliances,— liquid receivers, liquid filters, strainers, ice trays, etc. You profit by our standardization. Write today to



FEDDERS MANUFACTURING COMPANY
BUFFALO, N. Y.

Factory Representatives, F. B. RILEY & ASSOCIATES
320 Beaubien Street, Detroit, Mich.

THE WORLD'S FIRST LIFETIME Electric Refrigeration



Imagine . . . if you can . . . an automobile with a motor that has only 3 moving parts. Compare it with existing cars. Difficult, yes, but only by so doing can you understand the marvelous simplicity of the NORGE system of electric refrigeration that is revolutionizing the industry.

Only 3 moving parts . . . that's all. All operate submerged in oil under pressure. Quiet, too, for the Norge is of the

rotary type (like an electric motor) and not of the piston type (like a gasoline engine). This makes it as smooth as velvet in operation—and it gets better and better with use.

By all means investigate Norge. Investigate the adequately financed organization behind it; the experienced personnel; the complete—and different—merchandising plan that is ready for dealers. Your inquiry is solicited. Write or wire.

NORGE

NORGE CORPORATION • • • DETROIT

ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Electric Refrigeration Industry

PUBLISHED EVERY TWO WEEKS BY

BUSINESS NEWS PUBLISHING CO.

554 Maccabees Building, Woodward Avenue and Putnam Street
Detroit, Michigan. Telephone: Northway 4243-4244

Subscription price: \$1.00 per year; three years for \$2.00
Foreign Countries: \$1.50 per year Advertising Rates on Request

F. M. COCKRELL, Editor and Publisher H. A. DELASHMUTT, Advertising Manager
F. B. RILEY, Technical Editor C. M. SELPH, JR., Circulation Manager
Copyright 1927 by Business News Publishing Co.

MAY 25, 1927

To Central Station Executives

It is generally agreed that electric refrigeration offers the greatest possibilities to the central station of any electrical appliance which has yet been offered for household use. The sum total of its revenue-building possibilities are almost beyond comprehension. Its load characteristics are the most nearly ideal of any appliance using an appreciable amount of current.

The good-will possibilities of the electric refrigerator are among its outstanding merits. As a method of focusing public attention upon the benefits of electric service in the home, the electric refrigerator has no equal. Looking at the electric refrigerator from almost any angle, it ranks first in terms of potential value to the central station. That one device should have within itself so many advantages, is truly remarkable. It is small wonder that leaders in the public utility field have been keenly interested in watching the development of this new industry. In spite of the natural conservatism, there has been a disposition to give the greatest possible assistance to the most rapid development consistent with safety to the public.

The electric refrigeration industry, it should be noted, is being developed by a most self-confident group of individuals. The manufacturers have been willing to spend their own money and to do their own work pioneering the business. Far from attempting to pass the burden of market development to the central stations, they have scarcely appreciated how much assistance might be obtained for the asking.

In the expensive ground-breaking process, the industry has taken its losses without complaint. As a whole the industry is emerging from the troubles of 1926 sturdier and better balanced by the experience. The whole industry is now proceeding more cautiously, more determined to make sure it is right before going ahead. The central station industry may well afford to be extremely liberal in its attitude towards the electric refrigeration industry of today. No industry has ever worked harder or faster to eliminate its faults and to prepare itself to deliver real value for every dollar received. We bespeak for the electric refrigeration industry the fullest cooperation of the public utilities.

Changing Attitude in the Ice Industry

Look out for the ice man! He is getting wise. Awhile back he was scared, next he was sore. In both situations his antics were ludicrous and harmless. Now, according to reliable reports, he has gone into training. He is preparing to fight scientifically. Firpo tactics, he finds, are not so good. Tunney methods, he observes, get better results.

Harken to the new line of talk in the ice camp. The electric refrigerator, it appears, is rather interesting. Its exponents spend much money educating the public to the subject of refrigeration. Refrigeration, in fact, is getting to be quite the style. Why not join the crowd, they say, it looks like good business.

It develops that ice also has many merchandising possibilities. Already a number of new stunts have been tried with marked success. The imagination of the ice industry has been stirred. Radical departures from old-time methods are in the offing. Last year discontent, and even despair, marked the attitude of the ice interests. Today a new tone is noticeable throughout the published reports of proceedings at the various association meetings. Enthusiasm has supplanted depression.

We congratulate the ice industry on the new trend of thought. We look forward to the active participation of the ice industry in a continuous, constructive effort to bring about a widespread public understanding of the necessity for adequate food protection by complete all-year refrigeration service. Both the ice and electric refrigeration proponents will be benefited—as well as the public.

Five Hundred Subscribers Per Month

There continues to be a steady increase in the number of paid subscribers to ELECTRIC REFRIGERATION NEWS. On February 2, it was announced that the first thousand subscriptions had been received. On March 31, the second thousand enrollments was reported. With this issue, the number has reached *three thousand*, a steady increase of *five hundred per month* since about the first of the year.

As previously stated, a bogey of five thousand paid subscribers was set up as a mark for the first year of operation of the paper. If the progress made during the past five months is continued, this mark will be exceeded by the time ELECTRIC REFRIGERATION NEWS achieves its first birthday.

May we again remark that the response of the industry to this effort to provide a medium for educational news has been most highly encouraging. Everyone in the field seems to be pleased with the continued growth and improved service of the paper. Everywhere there appears to be a desire to help in making the paper worth while and in extending its influence throughout the industry.



Mrs. Snyder, Famous Candy Maker, Uses Electric Refrigeration Exclusively in Her Factory and in Her Home

Business Woman Tells Why She Became Interested and How
She "Shopped" for Equipment to Modernize
Her Chicago Establishment

By Lucinda E. Judd

This is Mrs. Ora Snyder, internationally known candy manufacturer and retailer, whose slogan is: "I can't make all the candy in the world, so I just make the best of it."

A very clever slogan this, and capable of a two-way interpretation.

The foundation upon which Mrs. Snyder built her business was that she coveted and sought, always the best. So, when electrical refrigeration was being discussed quite generally, she hesitated whether to continue with ice cooling or to seriously investigate the newer electrical process which was rapidly coming into use. The resolute determination which she had always adhered to, of having the best things on the market for doing her work, sent her "shopping" to aid in making a decision.

With this in mind, she consulted prominent hotel managers, she went to the most reliable restaurants and other institutions whose problems were similar or identical with her own, and some of whom were "trying-out" electrical refrigeration.

The result of all this investigation was that a twelve-ton ice capacity electrical refrigerating plant, of a reliable make, became, five years ago, the cooling, energy-producing force in her factory at 119 North Wabash avenue, Chicago.

"When I made this installation, five years ago," said Mrs. Snyder, "I had only a ten-year lease on the building I now occupy, and with no option for a renewal at the expiration of this period, but the results obtained from our electrically cooling appliance have been so gratifying and so satisfying, that it has become an indispensable asset to my business. Time is saved, and 'time is money,' you know. By the electrical method an efficiency is developed impossible of attainment with ice. In fact, I am certain we could not take care of the increasing volume of business coming to us without electrical refrigeration."

Before deciding, however, "which one to buy," Mrs. Snyder's advice is to "shop." "Shop intelligently and consistently and when you have made your decision and are ready to hand out your money, let it go to a firm with a background of reliability and honest integrity, a firm which has to maintain its reputation for high quality merchandise and the 'square deal' in service."

All of the seven work-shop floors of the Snyder factory are serviced from one unit in the basement. This twelve-ton machine is operated by a 25 h. p. motor. The temperature of 55,000 cubic feet of air is reduced, every twenty-four hours from a maximum outside heat of 85 degrees to from 55 degrees to 65 degrees, as required.

Of course, only a part of each floor is insulated; it always is done in the packing room and in the chocolate dipping rooms.

One thing worthy of real consideration, at least to the layman, is that the installation cost of electrical refrigeration does not exceed that of an ice equipment, while the operating cost is at least 50% less.

To the credit side of the electric refrigeration ledger must also be entered the items of convenience and cleanliness, which invariably ensue from the use of electricity. We cannot overlook the item of service, either. "Any man with average brains can run this machine after ten days' instruc-

tion," is the claim of the general utility man of the Snyder plant, in a recent interview. Among the economy items is the elimination of the salary of a licensed engineer.

The present equipment is taking care of a business 500 per cent greater than it was when the installation was made, and doing it better.

Better, not as to quality, but because the candy goes to the consumer in much better condition. This is due to the uniform temperature which it is possible to maintain in the work rooms and also because of the entire absence of moisture all along the line of work. The accuracy of this statement has been repeatedly verified.

With the old ice-cooling method, when the outside temperature reached 85 degrees it was necessary to suspend work until it became cooler, for it was impossible to dip chocolates at that heat. This was a distinct loss of time and money.

Clean fresh air is an essential where candy is made. There are two reasons for this. One is from the standpoint of health; where forty people are at work in a room it is necessary that the air be changed continuously. The other reason is that, in order to dry chocolates properly and to obtain that bright, "shiny" lustre so desirable to candy, there must be perfect ventilation. The electrical unit in the basement accomplishes this, along with its other achievements.

RADIO AND ELECTRIC REFRIGERATORS MAKE GOOD COMBINATION

Electric refrigeration was first used by the Atwater Radio and Engineering Company, Houston, Texas, as a fill-in for the off-season in their radio store, but was soon found to be the more profitable business, states F. K. Atwater, the proprietor, in the May issue of *Electrical South*.

"Electrical refrigeration in the South offers a much greater field than radio," Mr. Atwater stated. "Here in Houston it comprises a year-round business in itself. In addition, we are pleased with refrigeration because of much of the demonstration requisite in selling radio is eliminated. Demonstration of radio is particularly difficult here much of the time because of the static interference."

"Subscribing for building report services and obtaining advance information on contemplated buildings from other sources, the firm follows up the owners in an effort to sell electric refrigeration. This is done in systematic fashion, a card filing system being maintained. To this list are added the names of some owners of sufficient means to make them prospects. Four field salesmen are employed on a commission basis to follow up prospects."

"Three types of electric refrigerators are kept in the store, connected up and ready for demonstration. Home demonstration is seldom given, but in the few cases where it has been resorted to a sale had been made."



Eight Stores in Chicago

The volume of work accomplished, directly or indirectly by this machine may be visualized by the following data:

Mrs. Snyder has eight stores in Chicago, and an annual rental of \$110,000.

She has in her employ from 300 to 600 persons, the number dependent upon the season of the year.

Mrs. Snyder uses daily in her factory:

- 1 ton of sugar
- 500 lbs. of pecan nut meats
- 125 gallons of sweet cream
- 95 lbs. of pure, sweet butter
- 2 gallons vanilla extract
- 60 dozen egg whites
- One-half ton of chocolate.

Buys Machine for Her Home

Electrical refrigeration proved so satisfactory in her factory that Mrs. Snyder had a complete refrigerating unit installed in her home. "It's just splendid, and I love it," she enthusiastically declared to the writer; "there's never any trouble; there's no iceman coming in and musing up the floor, everything in the refrigerator is always so fresh and clean and cold. You can leave food uncovered in it for days, for the ventilation is so perfect and the interior so dry that odors do not carry. It is a pure delight."

Snow Queen Represents Frigidaire at Advertising Ball

Sponsored by the Denver Advertising Club, an animated advertising ball was held in the Municipal Auditorium. Many of Denver's leading concerns were represented. Frigidaire was advertised by "Snow Queen," Miss Georgie Pring. A magnificent \$1,500 ermine coat, loaned for the occasion by a prominent Denver furrier, enabled Miss Pring to carry out the idea in a striking manner. Denver newspapers gave considerable publicity to the "Snow Queen."

Receives Many Inquiries for Booklet Mentioned in the "News"

"I believe it will interest you to know that the small news item relative to our folder entitled '6 years old,' which you mentioned in your issue of April 13th, has pulled approximately 40 requests for a copy thereof, showing conclusively that ELECTRIC REFRIGERATION NEWS is closely read."

"Too, it goes without saying, that we are very well satisfied with the number of inquiries prompted by our advertisement in the same issue."—W. P. Arthur, Sales Manager, Polaris Electric Refrigerator Company, Logansport, Indiana.

Norwegian Engineer Invents New Refrigerator

It is reported that a new system of refrigeration has been invented by Ivar Amundsen, a young Norwegian engineer of Oslo University. The refrigerant used in the Amundsen system is alcohol and the device is said to be devoid of all machinery.

Buyer Who Demands Low Price Usually Gets What He Pays For

Excellent Values Offered at Present Prices—False Economy in Trying to Beat the Game

By G. M. Johnson, Northey Mfg. Co., Waterloo, Iowa

Our country is a magnet that draws progressive identities from every nation. Here in the fertile soil of demand, where appreciation is sure and where reward is not hopeless, latent ability is stimulated into production. Yesterday's ambition, today's sensation, tomorrow's commonplace—that is itself commonplace.

We have learned to expect invincibility of the Yankee talent for invention. This confidence is a national pride, a national boast. So it is that while we appreciate the result, we fail to recognize the painful mental processes, the bull-dog grit and the years of effort that must, and do, precede each new marvel.

Electric refrigeration, automatic and foolproof, did not spring full panoplied, "like Minerva from the brow of Zeus." The cry for lower price arose, as ever, before a demand was created to justify that price.

The answer to that cry has been to throw the business largely into those channels where publicity could be arranged for on a colossal scale, and where high-speed production with resultant low price has served to popularize the idea in a very short time.

Popularity has been achieved on a basis of what the public is willing to stand in the matter of first cost. This standard does not necessarily conform to the manufacturer's own private opinion of what is best for the user. It does conform to a demand for quick profits. While they may deplore the necessity for so doing, most makers build down to a price that makes for volume sales. The user gets exactly what he pays for; but over-enthusiastic salesmen are often responsible for the erroneous idea that this price provides a lifetime of utility.

In this manner, the interests of the manufacturer, the dealer and the user will perhaps be best served—perhaps. In machine design the fit will survive, as it ever has, though originators of the same may succumb. All this affects the lay public in a way that few purchasers will anticipate.

A person requiring today an automobile such as costs \$1,000 or more, could scarcely be misled into the being that a \$500 car would answer acceptably; consequently, no blare of brass proclaims it. Time has made us automobile wise.

The refrigeration market now offers excellent value for any purpose; though this is not to say that any one particular machine will best fit every need, nor that improvements will not be made. Refinements there will be, mayhap revolutionary ones; but that should deter no one from buying now. He who waits for the ultimate may safely enter into a life-long contract with the ice man.

The purchaser who really needs ten, twenty or more cubic feet of refrigerated space, and who permits himself to be misled into buying less, that purchaser will do well to recognize his seeming thrift for what it really is—false economy.

Beating the Game

You have your own idea of what you are willing to pay for a given thing. Everyone has. The amount is an arbitrary one and is based upon the belief that the other fellow could sell for less if he chose. In this article the writer stresses the fact that a high priced machine or a low priced one should be recommended in accordance with the best interests of the user. It is urged that this be kept in mind by maker, seller and buyer. When customers attempt to beat the game by buying too cheaply, who loses? Read this and see what you think.

He who should buy with a view to long use is justified in an investment that would have less appeal for one whose desire is equipment calculated to help the sale of a building; thereafter to perform for a period in proportion to first cost.

During this early day of claim and counter claim, confusion exists. It exists not only with the layman, but often with his adviser—the supposedly informed dealer. Too often, price is the chief deciding factor. "If you can't sell them what they ought to have, sell them something."

Buyer Wants Stability as Assurance of Future Service

The canny purchaser demands seeming stability on the part of the manufacturer as an assurance of future service. At least, in stressing this point in the past, he has been considered canny. The trouble has been that the precaution has not always borne good fruit.

Happily, the time is at hand when this is becoming of less and less importance. Those days are passing which have veiled the principles of electric refrigeration in a fog of mystery. Service is now obtainable of mechanics who can and do take care of machines of almost any make. Our industry is lifting itself to a place in the sunlight.

ZEROZONE ANNOUNCES A NEW SMALL MODEL

An advance small model Zerozone, in a one-piece seamless steel cabinet finished in white Duco, is announced by the Iron Mountain Co., manufacturers of the Zerozone machine. Deliveries will begin in a few weeks.

FRIGIDAIRE USED TO AID FLOOD REFUGEES

Every measure to protect the health of Mississippi river flood refugees is being taken by authorities at Memphis, Tenn., even to providing a Frigidaire for milk which is given children in the refugee camp at Memphis.

One thousand colored refugees are being taken care of at the Memphis fairgrounds. Among the refugees are many children and infants, and the proper refrigeration of their milk is essential in preventing an epidemic as a tragic aftermath of the flood.

Delco-Light is also playing a part in the refugee camp, since it provides illumination at the fairgrounds at night, when many of the trains arrive with their loads of refugees.—Dayton Herald.

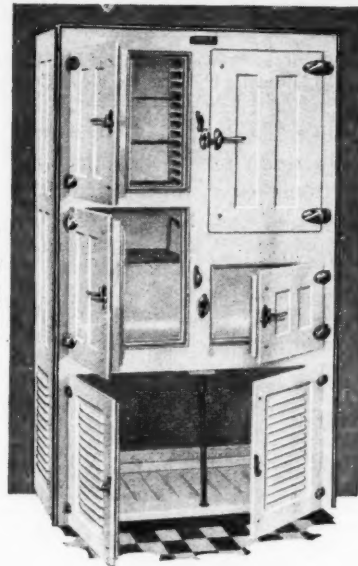
SLOAN SAYS MOTOR OUTLOOK IS GOOD

The automobile industry faces a good year, with little likelihood of any radical price changes, in the opinion of Alfred P. Sloan, Jr., president of the General Motors Corporation. "As to our company," he said, "it is likely our sales volume in 1927 will be as large, if not larger, than the record established last year."

"There is every reason to believe the country will continue to enjoy further prosperity in the last half of 1927," Mr. Sloan said. In commenting on soundness of trade conditions generally and outlook for the remainder of year, Mr. Sloan warned that prophecies as to business conditions are at all times dangerous and are apt to be rendered empty later by circumstances beyond view at the time.

"The decision of the General Motors Corporation," he said, "to concentrate improvement of design and manufacture of automobiles and other products which the corporation is building has made it inadvisable for the corporation to interest itself actively in aviation."—New York Sun.

BOHN SYPHON REFRIGERATORS



Beautiful, Distinctive. Can be had in 7, 9 and 12 cubic foot net food storage capacity.

White Porcelain Enamel inside and outside. The machine compartment is ideal for storage space where remote installation is made.

For Electric Refrigeration

Write for Full Particulars

Bohn Refrigerator Company

SAINT PAUL, MINNESOTA

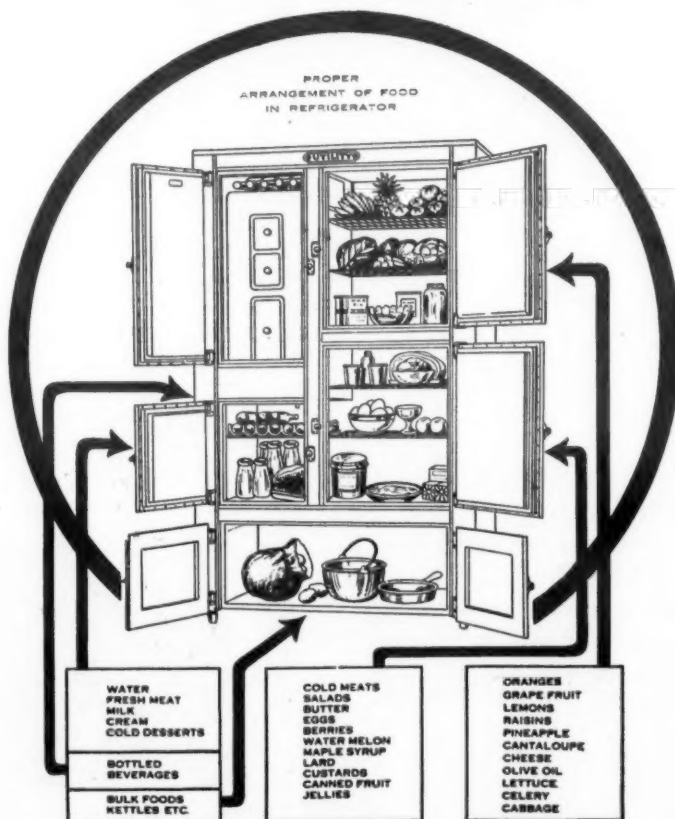
These Models are on Display at our own Stores in

NEW YORK
5 E. 46th St.

CHICAGO
227 No. Michigan Blvd.

BOSTON
707-709 Boylston St.

Food Chart Shows Correct Use of Electric Refrigerator



Hang this chart near your refrigerator and insist that the foods be arranged accordingly leaving room for the proper circulation of air around each food.

The above chart is furnished by the Utility Corporation, Cleveland, Ohio, to each purchaser of an electric refrigerator, and has proved helpful in assisting the customer to get best results by proper placement of food in the different compartments. The chart is copyrighted, 1923, by H. W. Hibbard, Cleveland, Ohio.

Atlas Refrigerator Cases

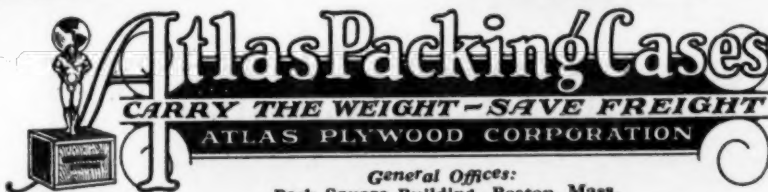


MANUFACTURERS—

Atlas Refrigerator Cases are cut to dimension to fit any refrigerator, large or small. They stack and store compactly. Lightning-like rapidity, compared with old fashioned methods, characterizes assembling operations in the packing rooms where they are used. Labor expense takes a swift drop. Freshly finished refrigerators can be packed, stored, or shipped immediately without fear of "printing", in damage-proof Atlas Refrigerator Cases. And damage claims are forgotten when these sturdy, handsome plywood containers with a manufacturer's trademark strikingly printed on their sides are carrying refrigerators to all parts of the world, protecting and advertising them at the same time.

DEALERS—

Rigid, protecting Atlas Refrigerator Cases guarantee the receipt of beautifully finished refrigerators without a scratch in their spotless, shining enameling, without a single injury inside or out. No touching up, no patching up,—the refinishing item can be crossed off the books entirely when Atlas Cases guard refrigerator shipments. Their lightness in weight effects a freight saving not to be overlooked. Their simplicity of construction makes unpacking speedy and repacking an easy job, besides saving the usual receiving-room clutter. Their superior strength and endurance insure perfect protection and safety to reshipments.



General Offices:
Park Square Building, Boston, Mass.
New York Office: 90 West Broadway
Chicago Office: 649 McCormick Building

Public Utility Company Sells Ice by the Package

Cipsco Ice Cubes Service Enables Ice Company to Bring Back Many Customers Who Own Mechanical Refrigerators

By C. W. Chiles, Manager, Publicity Department
Central Illinois Public Service Company

Reprinted from *Printers' Ink*

Founded substantially upon the theory that the customers' desires and needs should be the ultimate determination of the various sizes in which Cipsco Certified Ice should be sold, the Central Illinois Public Service Company inaugurated the Cipsco Ice Cube service in Springfield, Ill., on January 29, 1927.

At the first public announcement, made before 1,200 Springfield housewives assembled at a cooking school held in Springfield during the fall of 1926, the reaction was so favorable, coupled with the data from other analyses, that the decision to definitely market the cubes was made.

To announce this new service a newspaper advertisement was run immediately prior to January 29, stating that all regular residence ice customers would receive a full size sample of Cipsco Ice Cubes with their regular Saturday morning ice delivery and requesting those not taking ice regularly at that time to phone the company if they cared to have a sample delivered to them on that date. The response to this advertisement was overwhelming. More than 800 trial packages were phoned for and delivered on that day, besides those given to all the regular customers.

Cipsco Ice Cubes have a number of advantages, the chief one being the attractiveness of them, in that every cube is crystal clear, resulting from every effort being made to cull the cubes during cutting and packing so that each cube is H_2O and uniform in appearance.

The results expected from the service, as pointed out by a number of things which have already come to the company's attention, are that it has already made new regular Cipsco Ice customers during the winter, as well as having made a number of customers for only the cubes.

It has resulted in several cases in an earlier starting of the regular Cipsco Ice service this spring, and naturally it is expected that the regular ice service will be extended later in the fall.

The company is inaugurating the service in additional towns and finds that in each town the service opens with much enthusiasm on the part of the customer.

Because of the crystal clearness and quantities of Cipsco Ice Cubes available, the company has re-established as ice customers for these cubes many who own mechanical types of refrigerators.

Soda fountains, restaurants and hotels are using the quantity delivery, finding that, while the cubes are slightly higher in price than Cipsco Ice on the regular service, the cubes prove an economy because they do not melt as fast as with the old method of chipping ice, which usually results in a large melting waste.

Cipsco Ice Cubes also have another advantage for auto outing parties and trips. The pure white sanitary cartons of Cipsco Ice Cubes are ideal for use in vacuum jars and are ample and convenient in quantity for icing running-board refrigerators and outing baskets.

The price of the carton is 10 cents at the platform, one twenty-five-pound, or residence coupon from regular ice customers on delivery routes, or 15 cents in cash if purchased for cash direct on the delivery routes.

The introduction of Cipsco Ice Cubes service in Springfield has been supported by a consistent advertising campaign.

This campaign will later be interwoven with the regular ice advertising. Following the first four or five pieces of copy, the campaign is conducted largely along reminder lines for six advertisements. It has been found that this method of advertising the cubes is most effective: Using newspapers to secure the potential business and the distribution of direct advertising through its own people direct to the customers, advising them about the company's services and securing the most effective use of its products.

Builders Hardware Department Provides Favorable Condition for Electric Refrigerator Promotion

By John T. Bartlett

A new entrant into the electric refrigerator field in Denver is George Mayer Hardware Company, Arapahoe Street. This company is now handling the Absopure.

The Mayer store is one of the largest hardware businesses in the West. Although taking up electric refrigerator promotion with enthusiasm, the company has heretofore, however, done comparatively little specialty selling. It has sold ranges, electric washers, and various other articles on terms, but principally in response to public demand, and on a comparatively small scale. The inducement to get behind the electric refrigerator comes from another angle.

The store has a very successful builders' hardware department, and is a big factor in the trade of Denver and Colorado. For years this department has done business heavily with contractors and builders. It has worked with the building trade groups, learned how to handle credit relations with them, how to approach them.

The Mayer Company feels that contractors and builders are going to be important figures in the buying of electric refrigerators. While selling them hardware, why not go on and sell electric refrigerators, too? Very properly, a very fit time for electric refrigerator installation is when a home or apartment is constructed.

A large gas range sale was "on" at Mayer's when the News representative

called. A promotion plan observed is worth passing on.

A special cook book, prepared by a gas range manufacturer, was being distributed in large numbers. Into every one of these books went, too, a folder on the Absopure electric refrigerator. It costs little to advertise the electric refrigerator thus.

Hardware and department stores selling electric refrigerators have an advantage in this respect which many will appreciate and cultivate to the utmost. They have continuous contact with a great many regular customers. Manufacturers advertising literature can be distributed by providing special racks with a friendly sign inviting, "Help Yourself." Another plan is to have a stack of electric refrigerator literature on the wrapping counter, and include a folder in the package of every customer deemed a logical prospect.

It remains to be discovered, as electric refrigeration develops, the extent to which the hardware store will be a factor. Throughout the country the tendency is for builders' hardware business to be concentrated in the hands of stores which have specialized in it. Such stores can have a natural interest in the electric refrigerators, certainly. Then there is the type of hardware store which has taken up specialty selling aggressively. It, too, is in a logical position to consider the electric refrigerator.

Automatic Switches

for

Household and commercial refrigeration units, either thermostatic or pressure operated. Neat, compact, reliable, inexpensive.

Made with mechanical contacts employing a new patented make and break method.

Penn Electric Switch Company
306 12th Street Des Moines, Ia.

INCREASED USE OF ELECTRICITY IN MICHIGAN

Daily Consumption Now in Excess
of 10,000,000 Kilowatt Hours

Again breaking all previous records for the use of electric energy in the state, the industries and homes of Michigan required an average of 10,682,000 kilowatt-hours—or 14,100,000 horsepower-hours—every day in March for light and power, according to the U. S. Geological Survey. This represents an increase of 12 per cent over the daily use of electricity in March, 1926.

Each succeeding month of this year, for which reports are available, has witnessed the establishment of a new high record for the employment of electricity in performing the work of the state. In January the daily consumption figure crossed the ten million kilowatt-hour mark for the first time, and in February the record became ten and one-half million.

For the United States the average production of electricity by public utility power plants in March was 216 million kilowatt-hours a day, which was about half of one per cent less than the daily output for February. The country's hydro-electric plants produced more electric power in March than in any previous month, the daily average amount being 83,870,000 kilowatt-hours.

To Use New "Arco Metal" in Refrigeration Parts

The Research Department of the American Radiator Company has succeeded in developing a new iron formula which will be known as Arco metal. This iron mixture will be used in the refrigeration sections and other products of the company. It is a metal of exceedingly fine texture, allowing for fine machining, but it is particularly noteworthy because of its high resistance to corrosion.

*At the Service of
Refrigerator Manufacturers*

TESTS → Electrical
Mechanical
Chemical

30 Years Experience
60,000 sq. feet devoted to Laboratory Work
300 Employees
200 at New York
100 scattered from Boston to Oakland, Calif.

Adequate and Comprehensive Equipment

*Laboratory organized and stock held by Central
Station Companies in all parts of United States*

Sole Business Testing
[Reports confidential Property of Clients]

KNOW

by Test

Electrical Testing Laboratories
80th Street and East End Avenue
New York City

Flintlock Condensers

EFFICIENT • ECONOMICAL • COMPACT

for

Electric Refrigeration

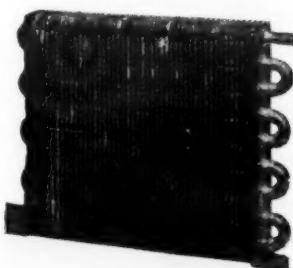


Size of
Core

14" x 19 1/2"

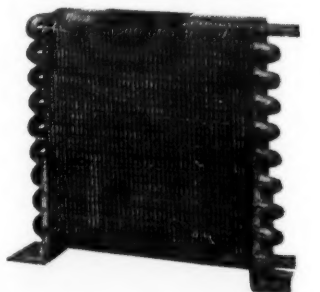
Three rows of
Tubes for
Commercial
Units

One row of tubes
for household use



Flintlock Condensers can be
furnished in any size desired
—from the smallest to the
largest. Our booklet giving
complete data gladly sent
on request.

Two rows of tubes
for household units



FLINTLOCK CORPORATION

4461 West Jefferson Avenue :: :: :: Detroit, Michigan

The Gas Fired Refrigerator

An Address Delivered at the Fourteenth Western Meeting of the American Society of Refrigerating Engineers, White Sulphur Springs, W. Va., May 23, 1927

By F. E. Sellman

In a previous talk delivered before the New York Section of the Refrigerating Engineers, last October, the author dealt in detail with the historical development of the continuous absorption type of machine from the time of Carre up to the time of the Platen-Munters System, and in that paper traced the various experiments conducted by Geppert, of Germany. In his talk delivered last December before the New England Section of the American Gas Association, the author dealt in detail with the effect of gas refrigeration on the gas industry, especially bringing out the advantages accruing to this industry from the new load created by refrigeration. It seems unnecessary to go into the details of the refrigerating cycle, as everyone here is undoubtedly familiar with it by this time, so today's paper covers the developments made in this country to date since the arrival of the first Swedish Platen-Munters machine.

Von Platen and Munters were two students at the Royal Technical School in Stockholm, and in preparing for their graduation thesis developed and designed a working model, which later became known as the Platen-Munters Refrigerating System. The two students graduated in June, 1922, and on August 18th of the same year the first patent application was filed in Sweden. It is seldom that a new invention has met with such rapid development as occurred in this case. Within three years the original model was modified and developed, so as to give a commercial and salable refrigerating unit. In the year 1925 a large number of refrigerating machines were placed in commercial service. During the year 1926 about five thousand units were turned out and placed in service in Sweden. In September, 1925, the Platen-Munters machine was brought to this country, and shortly thereafter the American rights taken over by the Electrolux Servel Corporation.

Changes Necessary to Meet American Market Requirements

The machine as brought over was naturally designed for northern European service, where extremely cold cooling water and moderate room temperature are encountered. The machine was placed on test to develop its practicability for American service, but it was soon found that certain changes would have to take place in order to bring the machine up to American requirements.

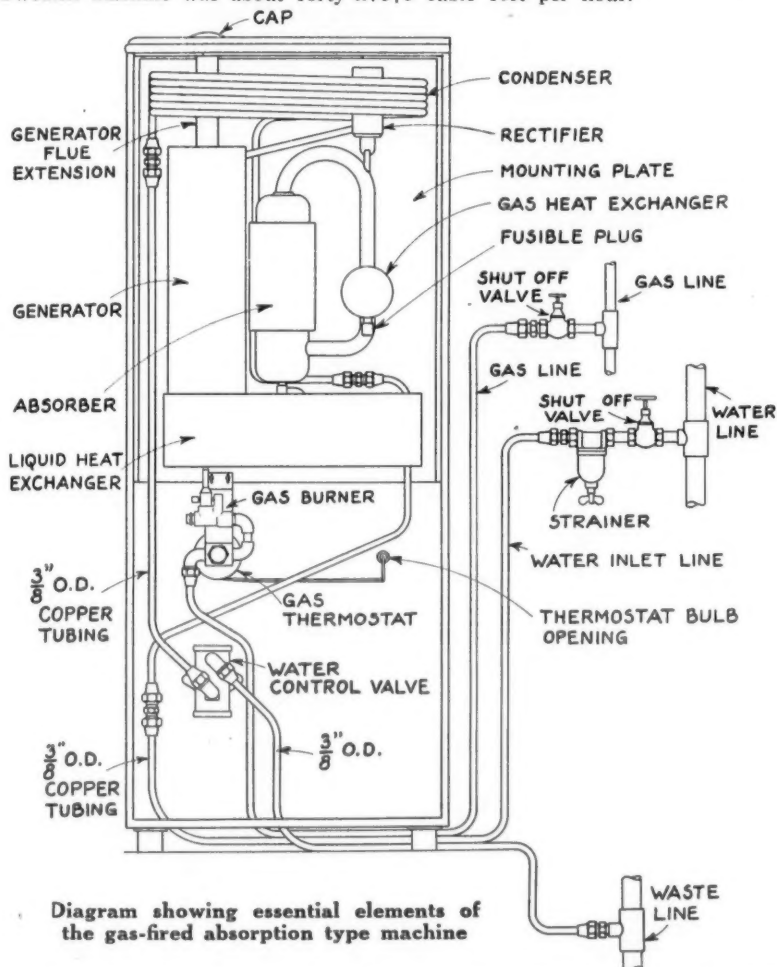
The original ice melting capacity for the Swedish machine was about forty-five

capacity of 75 lbs. per twenty-four hours and raised the efficiency to 32½% when operated by gas. When heated electrically the efficiency rose to 38%. The machine was also capable of producing sufficient refrigerating effect to take care of the Electrolux Servel refrigerator under conditions of 100° F. room temperature and 90° F. cooling water.

The maximum efficiency of the original Swedish unit was reached when an input of 730 B. T. U.'s per hour was furnished, while the maximum efficiency of the machine developed in America was reached when 1,350 B. T. U.'s were used. The capacity reached its maximum at about 1,300 B. T. U.'s with the Swedish machine, but with about 1,650 B. T. U.'s for the American machine. These improvements, both as to capacity and efficiency, were brought about by many developments, including a new type of rectifier, improved thermo-siphon, and the use of a gas heat exchanger.

The figures quoted above were furnished from tests conducted by the Consolidated Gas Company of New York, and the curves showing increase in efficiency and capacity as well as gas and water consumption were derived and furnished by the above-mentioned company.

Since the efficiency and capacity increased with the increase in B. T. U.'s furnished to the unit, it was necessary to control the heat input so as to get a predetermined refrigerating effect. Using gas of 540 B. T. U. per cubic foot heating value, the minimum gas required to assure satisfactory pumping through the thermo-siphon was 1½ cubic feet per hour, and this had to be increased to a maximum of 3 cubic feet per hour when maximum refrigeration was desired. This necessitated, therefore, the development of a burner that would burn satisfactorily between the ranges of 1½ cubic feet and 3 cubic feet per hour.



pounds per twenty-four hours, while its thermal efficiency was about 18%. The Swedish public were apparently content to utilize a manually controlled machine, the control simultaneously regulating both gas and water. It was found that in order to make the machine salable in this country it would have to be designed so as to operate and give sufficient refrigeration where room temperatures of 100° F. and cooling water of 90° F. were encountered. It further had to be developed so that the machine would give the desired refrigerating effect automatically, and with controls making the unit serviceable for use with either manufactured gas, natural gas, electricity or oil.

Highest Efficiency When Heated Electrically

A laboratory was established in Brooklyn, where exhaustive developments were made by united effort of engineers of the American and Swedish companies. During the next year these men redesigned the machine and obtained an ice melting

It was necessary, also, that the burner be of the safety type so that, if for any reason the gas flame were extinguished, the gas supply to the burner would be automatically shut off. The first burner developed possessed these characteristics, but was designed for a gas pressure of about 2½ inches of water and 540 B. T. U. gas. In order to adapt the refrigerating units for use in districts where gas pressures and B.T.U. values vary considerably it was necessary to develop burners suitable for water, coke-oven and natural gases and to test and approve gas pressure regulators.

As the minimum gas required at any time is 1½ cubic feet per hour, the gas thermostat was designed to always allow that quantity of gas to pass to the burner, but when regulating the gas supply to gradually augment the flow to a maximum of 3 cubic feet capacity. The thermostat is of simple construction, easily set and adjusted. It consists of a 6-inch bulb located within the food chamber. The operating mechanism of the thermostat is located in the machine compartment. The

bulb and operating mechanism are interconnected by capillary tubing. The bulb is partly filled with a liquid which, when expanded into a gas, creates a pressure which acts through the tubing against a diaphragm located in the body of the thermostat.

When heating the machine electrically, similar conditions must of course be taken care of, so that the machine will pump continually. With this in mind, a double heating element was developed which furnished a minimum wattage to keep up pumping but increased the wattage to take care of maximum load.

Control of Cooling Water

From the consumption curve of the cooling water needed it will be seen that after a certain amount of water has been used, further increase in water consumption becomes unnecessary and wasteful. This therefore clearly indicated that no desirable control could be developed for controlling water simultaneously with the gas and that any water control developed should be designed, using as a controlling factor a predetermined cooling water outlet temperature. Such a device was developed and with the outlet water temperature maintained at 90° F. the water consumption was practically halved as compared to that which was used prior to development of this water control. The machine is now operating satisfactorily with about 3 gallons of water per hour with water inlet temperature of 70°. The machine will operate and produce ample refrigerating effect with cooling water up to 90° F. With temperatures above this, the water flows through unrestricted parts in the valve and the valve becomes unnecessary, but where cooling water below 90° F. is encountered the saving in water is very material. Those familiar with early tests must realize the material saving made in the water consumption and that the objections raised to water cooling, both as to waste and costs have been overcome.

The machine unit comprising the generator, evaporator, absorber, rectifier, and

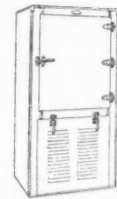
gas heat exchanger is made of heavy steel tubing inter-connected by steel pipes, all joints being oxy-acetylene welded. This produces a completely sealed unit, from which there is no danger of leakage. The units are designed to withstand a pressure of 3,100 lbs. per square inch, although only

(Continued on Page 14)

Wonderful Fund of Information
"As a new salesman in the line, I feel greatly indebted to your paper for the wonderful fund of information of electric refrigeration, that I have received in the reading of the copies issued since January."—R. H. High, 422 N. Parkside Ave., Chicago, Ill.

The Universal Cooler Way

for Stability and Performance



The Universal Cooler Apartment Grand Cooling Unit. Self Contained

Years in business, with machines in use all over the country, assure Dealers stability of Product and Company.

Long life and economy of operation guarantee Users satisfactory performance of Universal Coolers for

HOUSEHOLD USE

COMMERCIAL USE

DRINKING FOUNTAINS

ICE CREAM CABINETS

Desirable Territorial Franchises Still Available—Write for Details

Universal Cooler Corporation

Eighteenth and Howard •• Detroit, Michigan

Windsor, Ontario, Canada

CORK BOARD INSULATED

BUILT ESPECIALLY for ELECTRIC REFRIGERATION

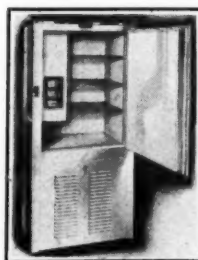


This new 1927 line is built according to specifications submitted by engineers for refrigerator cabinets to meet the needs of electric refrigeration. 3" of cork board encased in water-proof insulating sheathing is used in the four walls, top and bottom.

Rubber gasketed doors to prevent leaks. Three lights of glass in doors where glass panels are used—wood panel doors sheet cork insulated. The wood panel door refrigerator of this series can be installed in a hot kitchen and still give top results at minimum operating time for the unit. Ice door opening 22½" x 34" clear. Commodious ice chamber 27" wide x 22½" deep permits of over-coiling which increases ice cube capacity.

Style 49007 illustrated above is especially suitable for grocers or restaurants. 7' 6" wide, 2' 8" deep, 6' 8" high. Gross cubic contents 70'. Surface measure 175.5 square feet. Kiln-dried oak, exposed exterior golden finish. Extra heavy cast brass nickel plated hardware. A large unit of one of our factories is in production on this line to insure quick delivery in carloads or smaller lots. Write for new bulletin illustrating and describing this line.

GLOEKLER PITTSBURGH PA
ESTABLISHED 1856



STYLE G5-P
Residence Refrigerator
White porcelain inside and outside. Width 28", depth 22", height 61". Gross capacity, 7½ cu. ft. This and larger sizes described and illustrated in Household Refrigerator Bulletin.



STYLE 49037
Florist Refrigerator
5' 1" wide, 2' 8" deep, 6' 8" high. Cubic contents, 44'. Surface measure square feet 130.4. Glass panel doors and ends for display purposes.



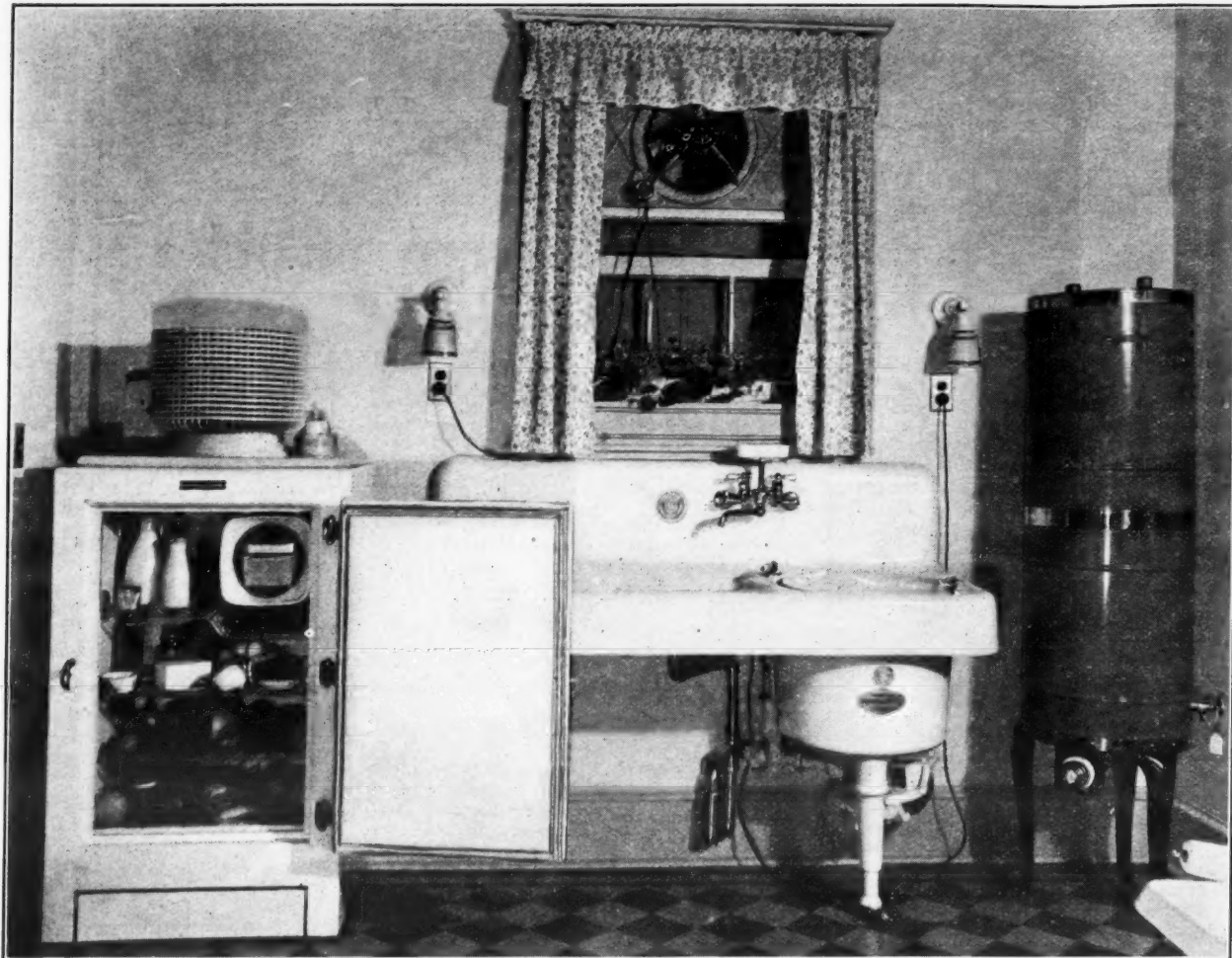
STYLE 41007
A narrow refrigerator with overhead coil chamber. 4' 2" wide, 2' 8" deep, 6' 4" high. Cubic contents, 43'. Surface measure, square feet, 108.7. Two wood panel doors and two glass panel doors.



STYLE 49127
For Hotel, Cafeteria, Restaurant, or Institution kitchen. 7' 6" wide, 2' 8" deep, 6' 8" high. Cubic contents, 70'. Surface measure, square feet, 175.5. All doors are wood paneled.

BERNARD GLOEKLER COMPANY, 1627-33 PENN AVE., PITTSBURGH, PA.

Electric Kitchen in the "Home of a Hundred Comforts"



ELECTRIC REFRIGERATION DEPARTMENT of GENERAL ELECTRIC CO.
HANNA BUILDING CLEVELAND, OHIO

Atlantic City Exhibit

April 20, 1927.

No. 5

Last Friday and Saturday, I was at the General Electric National Exhibit, 1400 Boardwalk, Atlantic City. This is open to the public from ten o'clock in the morning until after ten at night. It has a number of interesting things for the man and wife and a section of it is rightly designated as "The Home of a Hundred Comforts."

Nearly 5,000 people visited the exhibit during the two days I was there. Practically every one of them saw the G-E refrigerators. Many more, that passed along the boardwalk saw the window display, in which 7 and 5 cubic foot cabinets were shown.

The comments and reactions of these people are interesting. A comment like "small, nice, and in the kitchen" is the

(Above) Part of an inter-office letter commenting on the electric refrigeration display at Atlantic City. Note the heading of the letter, an interesting way of featuring the location of the unit.

THE GAS FIRED REFRIGERATOR

(Continued from Page 13)

about 200 lbs. charging pressure is used. A certain proportion of the run of units are tested to the 3,100 lbs. pressure at the factory. Every unit is subjected to a high pressure test of at least 1,200 lbs., in order to detect any possible imperfections in the welding.

From time to time we hear stories reflecting on the safety of gas-fired absorption machines. These stories emanated from experiences of ten to fifteen years ago, when a few gas-fired intermittent absorption machines were being marketed, most of them of large capacity for commercial use. A few serious accidents practically eliminated further progress in this type of machine, and produced adverse legislation. The cause of this trouble was largely due to a lack of understanding as to the necessary safety devices that are required on a large intermittent machine. A machine of this kind requires automatic mechanism to shut off the fuel at the end of the boiling period, to apply cooling water at the right time both for condensing and absorbing purposes, and a pressure limiting device in the event that the gas fuel or condensing water did not function properly. The fact is that these various necessary devices had not been properly perfected before the machines were marketed. Since that time there has been considerable progress made in small intermittent machines, so that, in some cases, for certain types of work the objections of the past have as a rule been overcome.

The Electrolux-Servel unit incorporates features which make safety devices not only unnecessary, but undesirable. The fuel burns continuously, and continued operation of the maximum burner adjustment would merely produce an extremely cold box. In practice this is prevented by making the gas consumption depend upon box temperature. If, for any reason, the cooling water were to fail, nothing would happen other than that refrigeration would cease. The reason that no safety device is required to meet this condition is due to the design of the machine, which provides so much radiating surface, in proportion to the heating surface, that all parts, with the exception of the generator, will throw off the heat as fast as it is supplied, through all the surfaces as represented by

the evaporator, heat exchanger, absorber, condenser and rectifier, and a state of equilibrium will be reached when these surfaces throw off the heat at the same rate as heat is supplied to the generator. These two features absolutely eliminate the need for any safety devices whatsoever for the purpose of safe operation.

For an entirely different reason, however, a fusible plug is installed on the absorber end of the gas heat exchanger. This was made at the suggestion of the New York Fire Department, as well as the National Board of Fire Underwriters, and is to provide for that emergency which would be brought about by intense exterior heat being applied to all parts of the machine, as would be the case if a fire occurred in the room in which the refrigerator were installed. To meet this emergency, the fusible plug is set to melt at about 250° F. and at that temperature simply relieves the refrigerating charge. This is a precaution which would be just as important if the machine were simply filled with either water or air, as the unlimited heat supply would produce an internal pressure which would eventually rupture the machine, regardless of what fluid is in the machine.

The Electrolux machine has long since passed its experimental stage. When first brought out into production, 250 sample boxes were sold to the various gas and public utility companies for the purpose of having them conduct tests and determine if the machine and box were what they desired and did what we claimed it would do. Apparently the machine and boxes designed met with instant approval, as is evidenced by the large orders placed for this machine. The machine lends itself to and is particularly suitable for apartment house service, especially in large and congested cities, where the fact that it is absolutely noiseless, its complete safety, and its freedom from service requirements have been deciding factors in its reception.

Combination Gas Stove and Refrigerator Has Been Designed

The unit may also be used in specially built boxes of varying sizes, built to fit into particular niches, which seems to be a growing demand in new apartment house construction. There has also been designed a combination of gas stove and refrigerator, where a gas stove is mounted on a refrigerator box, the same gas service line serving both.

There are in operation at the present time in the Eastern districts embracing the

environment of the Metropolitan district of New York, approximately one thousand (1,000) machines. The serving of these machines, in case it were necessary, would of course be done by the gas company, and from the information received they advise that so far they have not experienced any servicing whatsoever.

One question has undoubtedly occurred to many, "What effect has the gas flame with its products of combustion on the interior of the gas flue which passes through the generator?" The fact that the gas flame is not extinguished but ranges in degree from 1½ cubic feet per hour to 3 cubic feet per hour results in the gas flue always being kept at a temperature higher than the dew point.

Numerous people have asked the question, "What corrosion will take place within the unit?" Before the unit is charged with ammonia, distilled water and hydrogen, a high vacuum is pumped. Practically all oxygen is therefore removed. The machine of course has not been in service more than a few years, so we can go back no further—but machines that have operated for this length of time in Sweden have been cut open and no trace of corrosion has been found.

The dissociation of ammonia into nitrogen and hydrogen is an old story in absorption systems, where numerous joints and connections are used. In the Platen-Munters refrigerating unit there are no joints, no possibilities of air leakages. Then, too, if there should be a tendency to break down the ammonia into nitrogen and hydrogen—it must be remembered that the unit has already a heavy charge of hydrogen and this would tend to repel the dissociation.

No Leakage of Hydrogen

Another question that has apparently been causing some comment by refrigerating engineers is the possibility of leakage of hydrogen through the steel. As long ago as about 1860 it became known that hydrogen is absorbed by certain metals and can be diffused through them. This matter has since that time been subject to a great number of investigations which have

mostly centered on the diffusion of hydrogen through iron and steel, as this is of considerable technical interest for several reasons.

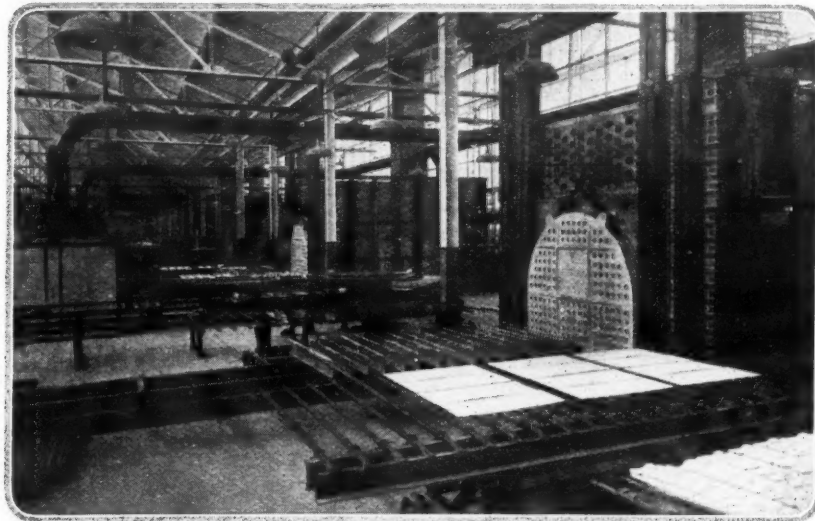
It became known from these investigations that gaseous hydrogen easily penetrates and diffuses through steel at red heat. The rate of diffusion, however, decreases and diffusion has seldom been observed at temperatures below 300° C. or 572° F., wherefore some investigators have assumed that the diffusion stops below this temperature, or the "hydrogen point" of steel. On the other hand it was shown that hydrogen which had been introduced into the steel electrolytically would diffuse through the metal at even room temperature.

As the Platen-Munters refrigerating unit contains hydrogen at ordinary room temperature under relatively high pressure, it was desired to determine if any appreciable loss of hydrogen would occur under these conditions. Earlier investigations had indicated that the losses would be quite small, but as no figures were available regarding their actual magnitude, tests were arranged and conducted by Professor's Borelius and Lindblom at the Royal Technical School at Stockholm.

Applying the data obtained to the Platen-Munters refrigerating unit, we find that no danger exists of loss of hydrogen through the wall of the apparatus. For instance, if we take an 80 cal. refrigerator which contains 1.5 gr. hydrogen and which will still operate if 0.3 gr. of this hydrogen were lost, we would find that it would take one hundred eighty (180) years before sufficient hydrogen escaped to make the apparatus inoperative. This certainly gives a wide margin of life.

Thousands of people have examined this machine, among them a large number of engineers. Generally speaking, the more technical a person is, the greater appeal has been made by the machine. The fact that the machine is noiseless, free from moving parts, compact, economical in operation and has apparently unlimited life, cannot but make us reflect on its effect on domestic refrigeration.

Part of the General Electric National Exhibit on the Boardwalk at Atlantic City



A Modern Refrigerator Enameling Plant

THE production of high-class refrigerators depends on a good job of porcelain enameling. The best and cheapest way to insure getting quality work is to have your own porcelain enameling department.

Above picture shows the fifteen-furnace enameling plant of the largest electric refrigerator manufacturer in the world. Two years ago this company called on us to install for them a three-furnace plant, with continuous enameling equipment. Later they added two more furnaces, and recently installed ten more furnaces, making a total of fifteen in all.

Our experience in this modern and rapidly-growing field has been exceptional, and we know that we can furnish you with better enameling equipment and better service than anyone else in the country. If you are interested in the idea of installing your own porcelain enameling department, write us for costs and information. You will be under no obligation for doing this.

Write for a copy of *The ENAMELIST*. Also for a free *ENAMELIST* Bridge Score Card.

THE FERRO ENAMEL SUPPLY COMPANY
CLEVELAND, OHIO

Cork Insulation—Functions and Uses in Electric Refrigerators

"Bark to Corkboard" Story Related—Characteristics, Insulating and Sanitary Values Explained

By H. B. Gates
Armstrong Cork & Insulation Company

Every new industrial development brings into general use words and names previously known only to a limited number of more or less technical people. Witness the vast enrichment of the language produced by the radio; the ordinary man and boy now handle with ease and fluency words that a few years ago were scarcely heard outside the laboratory.

So with electric refrigeration. The word "refrigeration" itself, familiar enough commercially, was not generally understood in the household. "Insulation" is another. To the average person, insulation meant the covering of electric wires, and very little else. But "insulation," like "superhydrodyne," has been dragged out of comparative oblivion into the full light of day and thousands of people now speak glibly, and correctly, about insulation in its relation to temperatures—heat and cold.

For most persons the fact that insulation is something to "stop" the flow of heat is as much as they care about knowing. But to those who are interested in the manufacture, sale, and purchase of refrigerated equipment it is of material interest and value to know a good deal more. Why and what is insulation? What materials are generally used for the purpose? What properties should insulation possess to insure satisfactory results?

In order to understand insulation we must know something about heat and cold. Let us clear up the subject right here by stating that there is no such thing as cold. Cold is a negative quantity and is merely the absence of heat, as dark is the absence of light, and not a tangible thing in itself. Heat, like light, is wave motion and gets about by various means as waves of differing intensity in the air or ether.

Heat has three methods of transmission, with only one of which we are very much concerned: (a) Convection, the principle utilized in hot air heating; (b) Radiation, as given off by a radiant heater or by the sun; (c) Conduction, which is transference from one particle of matter to another by impact. For example, a metal rod becomes heated throughout its length if one end is held in a flame. The heat is passed along from one particle to another by the molecular wave motion set up. It is with conduction principally that we have to do in considering insulation in relation to heat transfer.

One of the first facts to get in mind is that no material is entirely lacking in heat conductivity, or in other words, that heat is transmitted by conduction in some degree through all materials. In the perfect insulation there would be no conduction of heat, but there is no such substance. The materials we know as insulators are those whose conductivity for heat is so low that their use reduces the flow of heat to an almost negligible amount. As applied to refrigeration and refrigerated space their function is not to keep the cold in, but to keep the heat out, and so to lessen the amount of heat to be removed by the refrigerating machine and in this way to reduce the operating cost.

The most efficient heat insulation known is a vacuum, but except for very small containers, a vacuum is commercially and structurally impracticable, so that for refrigerators we must resort to the next best insulating medium—air subdivided into the smallest possible units. Air contained in spaces of appreciable size, such as between double walls, is not a good insulator for the reason that it is free to circulate and so to transmit heat by convection from the warmer to the cooler walls of the space. It must be so broken up and confined in minute particles that there can be no appreciable circulation, and hence no convection of heat.

Various methods of utilizing air in this broken-up form have been tried, the most common being loosely packed or felted fibrous substances, as mineral wool and various vegetable and animal fibers, because of the air enmeshed in their interstices. Shavings, sawdust, charcoal, and similar porous substances have also been used.

But whatever the material, there is one essential requirement: it must be dry and stay dry. Water is a good conductor of heat, and its presence in any material greatly reduces its heat-retarding value. There are other properties, too, having to do with structural practicability that must be considered in choosing insulation.

How Cork Grows

Cork is the bark of a tree, the cork oak, an evergreen, which grows in Spain and Portugal, and other countries bordering on the western end of the Mediterranean Sea. This is a hot, rather dry region, and in summer much of the vegetation is dried up and burned. But not the cork oak. Its sap continues to circulate; its leaves stay green; and it thrives and flourishes because its trunk and branches are sheathed with a covering of cork bark—insulation of nature's own devising. The natives of these countries long since learned this valuable lesson from nature, and in primitive times and even today in many places, their huts are covered over with slabs of rough bark, which they cut from the cork trees to protect themselves from the summer heat and winter chill.

In another respect also, the cork tree is unusual. Its bark can be removed without injury to the tree. Cork bark is

stripped at intervals of eight to ten years, renewing itself in the interim. It is put through some rough cleaning processes in the cork country and is then flattened out and baled for shipment to the factories where much of it is converted into various commercial products, such as corks, handles, life preservers, insoles for shoes, floats, etc. The cuttings from the factories, and a large part of the cork bark itself, go directly to the insulation factories to be made into corkboard.

So much for the tree. The cork bark is an unusually light substance. It is not porous however, but cellular. It is this cellular structure that gives cork its low heat conductivity, for each of these minute cells is hollow and filled with air, and this air is so constricted in its microscopic pockets that it cannot circulate and is so tightly sealed off that the air in one cell has no contact with that in adjoining cells.

Method of Making Corkboard

But cork in its natural state is little used for insulation. Its insulating and other properties can be, and are, greatly enhanced by a manufacturing process which not only improves its heat-retarding value, but makes it available in more suitable form.

At the insulation factories the cork is properly sized and cleaned of dust and dirt. This granulated cork is compressed in molds and put into an oven where it is slowly baked. The heat liquefies the natural gum and this serves as a binder to cement the mass into a solid sheet. No other binder is used or needed, and corkboard so made is known as pure corkboard to distinguish it from composition corkboard, which is cemented together with asphalt. Pure corkboard is much more efficient as a heat retarder and is also less liable to disintegration.

The sheets of corkboard are then trimmed into standard 12 inch x 36 inch boards, 1, 1½, 2, 3, 4, and 6 inches thick, and carefully inspected to see that they have been properly baked. Overbaked and underbaked corkboard are greatly inferior in insulating value and structural strength. Another very important point that is closely watched is the trimming of the boards so that they have clean, straight edges and square corners; otherwise it would not be possible to make close, tight joints when the insulation is erected in cold storage rooms or built into refrigerator walls.

Characteristics of Corkboard

Insulating Value. Pure corkboard is rated by the United States Bureau of Standards as having a heat conductivity value of 0.304 B. T. U. (British thermal units) per square foot, per inch of thickness, per degree difference in temperature between the two sides, per hour. A better appreciation of the significance of this value may be had by comparing it with the values on the same basis for other materials commonly used in refrigerator construction, as, for example:

| | |
|----------------------|-------------------|
| Copper | 2600.000 B. T. U. |
| Sheet steel | 325.000 B. T. U. |
| Wood | 1.020 B. T. U. |
| Pure corkboard | 0.304 B. T. U. |

Non-absorbence. Owing to its cellular structure and the absence of fibers and capillary attraction, cork even in its natural state is practically non-absorbent of moisture. After going through the manufacturing process, it becomes even more resistant to moisture. The gum that is liquefied by the baking spreads over the surface of the granules and effectually moisture-proofs them. But it is largely the absence of capillarity that peculiar property of fibers illustrated so well by a blotter or lamp wick, that accounts for the fact that even in contact with water corkboard does not "soak up." Moisture does not spread in it.

This is one of the most valuable properties of corkboard for refrigeration work. It enables the insulation to remain dry and therefore to retain indefinitely its initial insulating value. It might be thought that there could be little danger from moisture with the insulation sealed up in the refrigerator walls, but this is not at all the case. There is always infiltration of air, and air brings moisture along with it. In contact with the cooler surfaces, this moisture condenses and is taken up by any absorbent material. Moisture is a constant menace to insulation used for low temperatures and the only effective protection is a material that is moisture-proof.

Sanitation. This feature is closely connected with non-absorbence, for it is moisture that causes decay and mold. Corkboard stays dry, and therefore, entirely free from musty odor. It has no penetrating or tainting odor of its own. Corkboard is also vermin-proof.

Structural Qualities. From the standpoint of the refrigerator and cabinet builder, corkboard is ideal insulation structurally. It is rigid and cohesive and will stay where it is put without any settling, shrinking, swelling or disintegration. No amount of jarring, in shipping and handling will disturb it. Furthermore, corkboard can be sawed and trimmed easily, with clean-cut edges and corners, so that it can be readily fitted into spaces of almost any shape and with close, tight joints.

Corkboard is light in weight, considerably less than a pound per foot board measure, which adds very little to the handling and shipping weight, quite an important item in the delivery cost of boxes and cabinets.

Principal Uses. The electric refrigeration industry is principally interested in corkboard as it is used in refrigerators, both household and commercial, in ice-cream and beverage cabinets, soda fountains, and refrigerated delivery trucks.

The thicknesses used vary somewhat, the most generally used being 2-inch thickness, with a decided tendency recently toward 3-inch. One well-known household cabinet has 4 inches of corkboard. In commercial boxes carried at lower temperatures the thickness is increased, 4-inch being the proper thickness for boxes carried near 32°, and 5 and 6 inches for lower temperatures. Ice-cream cabinets use 5 and 6 inches.

Cork Covering. Another cork product similar to corkboard, except in form, is known as cork covering and is used for the insulation of cold lines and tanks, such as gas suction and brine lines, refrigerated drinking water lines, water cooling tanks and brine coolers.

Cork covering is made in exactly the same way as corkboard, but in special molds, which turn it out in forms ready to apply sectionally on the pipes and fittings. Cork covering is made for all standard pipe sizes and for all fittings, both screwed and flanged, and also in the form of beveled lags for cylindrical surfaces of large diameter. Both covering and lags

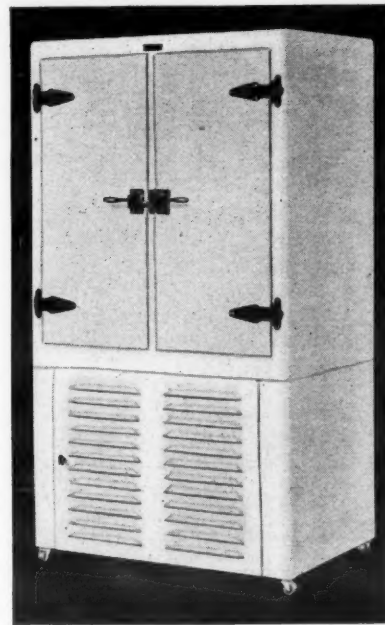
are finished inside and outside with a mineral rubber coating as an extra precaution against moisture and frost.

Insulation is assuming a position of ever-increasing importance for the reason that it is so closely related to the problems of conservation now engaging the attention

of engineers in all lines. Insulation is one of the most potent factors in reducing operating costs through the conservation of power and fuel and is a subject well worth the careful consideration of all who have to do with the utilization of heat and refrigeration.

The New CASTLE All-Steel Refrigerator

Substantially
Constructed
Perfectly
Insulated
Beautifully
Finished



Where remote installation is desired a wire shelf is furnished for the unit compartment making it ideal for extra storage.

Developed especially for mechanical refrigeration. The result of more than twenty years of exclusive manufacture of All-Steel refrigerators.

WRITE OR WIRE

The HOME PRODUCTS CORPORATION
JACKSON, MICHIGAN
Oldest Manufacturers of All-Steel Refrigerators in the Industry

QUALITY TRIM DENOTES QUALITY THROUGHOUT



Leading Manufacturers have adopted Monel Metal for facing and trim

Those manufacturers who strive to give their product outstanding quality and cleanliness use Monel Metal trim because:

1. It has a permanently bright attractive surface—it "dresses up" the refrigerator.
2. Its corrosion-resistance makes it easy to clean and keep clean.

3. It is inherently rugged—hard to dent or scratch.
4. It has no coating to wear off.
5. Its permanent ornamental value helps sell the refrigerator.
6. Last, but not least: It is available in ample quantities in desired dimensions, shapes and forms.

IMPORTANT: Refrigerator buyers are being taught to recognize a quality refrigerator by its Monel Metal trim.

Monel metal

THE INTERNATIONAL NICKEL COMPANY (INC.), 67 WALL STREET, NEW YORK CITY

Electric Refrigeration Patents

A Classified Record of All Electric Refrigeration Patents Issued Up to January 1, 1927—Fifth Installment

The United States Patent Office classifies all issued patents according to subject matter. The patents pertaining to refrigeration are contained in class 62, which is in turn divided into 178 sub-classes. Following is the fifth installment of the list of patents on iceless refrigeration machines and automatic control, compiled by H. R. Van Deventer.

Sub Class 116 Compressor-Condenser-Expander Circuit, Refrigerator Type

Refrigerators cooled by a compressor-condenser-expander circuit.

| | |
|--|----------------|
| 105,609, P. H. Van Der Weyde | July 19, 1870 |
| 163,576, G. H. Chinnock | May 25, 1875 |
| 234,788, K. Knott, Jr. | Nov. 23, 1880 |
| 316,900, T. Krausch | April 28, 1885 |
| 328,784, H. C. Johnson | Oct. 20, 1885 |
| 343,035, E. Kauffield | June 1, 1886 |
| 388,722, J. Ring | Aug. 28, 1888 |
| 424,747, F. W. Wolf | April 1, 1890 |
| 442,026, W. E. Facer | Dec. 2, 1890 |
| 443,020, R. G. Ward | Dec. 16, 1890 |
| 476,358, A. T. Ballantine | June 2, 1891 |
| 511,897, W. Wild | Jan. 2, 1894 |
| 525,412, T. Scheffer | July 24, 1894 |
| 559,753, E. L. Sharpneck and G. F. Knox | May 5, 1896 |
| 577,328, W. F. Singer | Feb. 16, 1897 |
| 630,616, A. T. Marshall | Aug. 8, 1899 |
| 642,120, G. B. Hiatt | Jan. 30, 1900 |
| 764,463, E. C. Hall | May 21, 1901 |
| 697,029, W. F. Singer | April 8, 1902 |
| 796,969, W. C. Hiester | Aug. 8, 1905 |
| 962,704, R. W. Emerson & F. Bishop | June 28, 1910 |
| 1,050,910, F. Bishop | Jan. 21, 1913 |
| 1,088,206, C. & W. A. Chase | Feb. 24, 1914 |
| 1,088,615, W. A. Owen | Feb. 24, 1914 |
| 1,103,855, G. Knox | July 14, 1914 |
| 1,117,786, C. A. V. Carlsson | Nov. 17, 1914 |
| 1,126,605, F. W. Wolf | Jan. 26, 1915 |
| 1,152,708, C. J. Coleman | Sept. 7, 1915 |
| 1,164,689, E. T. Williams | Dec. 21, 1915 |
| 1,165,926, E. T. Williams | Dec. 28, 1915 |
| 1,195,269, J. D. Ross | Aug. 22, 1916 |
| 1,212,127, H. H. Carpenter | Jan. 9, 1917 |
| 1,222,170, F. W. Wolf | April 10, 1917 |
| 1,224,594, J. C. Bertsch | May 1, 1917 |
| 1,225,433, G. F. Maich | May 8, 1917 |
| 1,256,730, W. A. Richter & E. S. H. Bars | Feb. 19, 1918 |
| 1,272,735, O. E. Ves Sells | July 16, 1918 |
| 1,276,450, M. Tibbets | Aug. 20, 1918 |
| 1,279,608, McKinnon, Summers & W. R. Viles | Sept. 24, 1918 |
| 1,280,765, G. A. Kramer | Oct. 8, 1918 |
| 1,281,672, G. A. Kramer | Oct. 8, 1918 |
| 1,284,965, A. P. Anderson | Nov. 19, 1918 |
| 1,296,871, M. Tibbets | Mar. 11, 1919 |
| 1,296,879, M. Tibbets | Mar. 11, 1919 |
| 1,307,431, A. P. Anderson | June 24, 1919 |
| 1,312,600, E. T. Williams | Aug. 12, 1919 |
| 1,312,932, M. Tibbets | Aug. 12, 1919 |
| 1,314,233, F. W. Wolf | Aug. 26, 1919 |
| 1,337,175, F. W. Wolf | Jan. 13, 1920 |
| 1,342,964, H. B. Joy | June 8, 1920 |
| 1,358,010, C. L. McCuen | Nov. 9, 1920 |
| 1,367,266, H. B. Joy | Feb. 1, 1921 |
| 1,381,056, R. M. Blakely | June 7, 1921 |
| 1,392,997, E. T. Williams | Oct. 11, 1921 |
| 1,396,574, D. P. Heath | Nov. 8, 1921 |
| 1,405,319, H. A. Parkyn | Jan. 31, 1922 |
| 1,419,215, H. C. Bucher | June 13, 1922 |
| 1,430,263, H. R. Sage | Sept. 26, 1922 |
| 1,436,444, B. B. Holmes | Nov. 21, 1922 |
| 1,439,051, A. P. Anderson | Dec. 19, 1922 |
| 1,440,935, W. G. See | Jan. 2, 1923 |
| 1,444,862, N. G. Anderson | Apr. 13, 1923 |
| 1,452,461, C. L. McCuen | Apr. 17, 1923 |
| 1,457,505, A. L. Uberti | June 5, 1923 |
| 1,463,999, C. M. Holley | Aug. 7, 1923 |
| 1,470,574, C. Jaeger | Oct. 9, 1923 |
| 1,496,718, C. L. McCuen | June 3, 1924 |
| 1,501,859, C. L. McCuen | July 15, 1924 |
| 1,502,791, C. L. McCuen | July 15, 1924 |
| 1,512,793, C. L. Palmer | Oct. 21, 1924 |
| 1,513,105, M. S. Groh | Oct. 28, 1924 |
| 1,516,744, W. H. Lindquist | Nov. 25, 1924 |
| 1,517,376, J. E. Mitchell, et al. | Dec. 2, 1924 |
| 1,527,997, J. C. Scovel, Jr. | Mar. 3, 1925 |
| 1,532,824, G. F. Knox | April 7, 1925 |
| 1,538,646, A. L. Uberti | Apr. 14, 1925 |
| 1,539,336, W. D. Mercer | April 24, 1925 |
| 1,537,601, M. S. Groh | May 12, 1925 |
| 1,549,335, C. C. Spreen | Aug. 11, 1925 |
| 1,552,070, C. L. McCuen | Sept. 1, 1925 |
| 1,565,689, H. B. Hull | Oct. 13, 1925 |
| 1,568,102, E. Thomson | Jan. 5, 1926 |
| 1,568,103, R. C. Tibbets, et al. | Jan. 5, 1926 |
| 1,576,188, D. P. Heath | Mar. 9, 1926 |
| 1,585,775, K. K. Hall | May 25, 1926 |
| 1,590,218, T. T. Williams | June 24, 1926 |
| 1,590,513, J. E. Holtz | June 29, 1926 |
| 1,592,848, C. W. Hack | July 20, 1926 |
| 1,602,178, C. C. Spreen | Oct. 6, 1926 |

Sub Class 118 Still-Condenser-Expander Circuit

Cooling apparatus having a still for generating a gas, a condenser or cooler for the gas, and an expander or expansion coil for vaporizing the condensed gas by the absorption of heat from the material or chamber to be cooled and means for returning the gas to the still.

| | |
|--|----------------|
| 119,795, Charles A. Seely | Oct. 10, 1871 |
| 248,751, T. F. Peterson | Mar. 17, 1874 |
| 558,227, F. Gergens | May 23, 1882 |
| 319,442, F. V. DeCoppet | Dec. 21, 1886 |
| 354,734, T. L. Rankin | Dec. 21, 1886 |
| 375,188, A. Osterbruck | Dec. 20, 1887 |
| 399,207, L. Perkins | Mar. 5, 1889 |
| 439,181, L. Perkins | Oct. 28, 1890 |
| 453,651, C. F. Miller & A. W. Carline | June 9, 1891 |
| 462,118, J. Erny | Oct. 27, 1891 |
| 462,904, C. F. Miller | Nov. 10, 1891 |
| 464,434, F. B. Hill | Dec. 1, 1891 |
| 473,156, D. L. Holden | April 19, 1892 |
| 473,157, D. L. Holden | April 19, 1892 |
| 481,146, C. F. Miller | Aug. 16, 1891 |
| 493,120, J. Scheuercker | Mar. 7, 1893 |
| 518,791, J. Scheuercker | April 24, 1894 |
| 522,696, R. V. DeCoppet | June 2, 1894 |
| 607,849, W. Hampson | July 26, 1898 |
| 612,804, E. W. Howell | Oct. 18, 1898 |
| 626,906, W. W. Harris | June 13, 1899 |
| 651,827, C. J. Coleman | June 19, 1900 |
| 652,210, W. W. Harris | June 19, 1900 |
| 653,171, C. J. Coleman | July 3, 1900 |
| 666,226, A. Schack | Feb. 15, 1901 |
| 668,310, F. W. Howell | Feb. 19, 1901 |
| 674,054, W. Burns | May 14, 1901 |
| 702,062, E. W. Howell | June 10, 1902 |
| 830,466, B. Thoenes | Sept. 4, 1906 |
| 871,325, C. J. Coleman | Nov. 10, 1907 |
| 925,039, W. W. Seay | June 15, 1909 |
| 926,080, W. W. Seay | June 15, 1909 |
| 941,738, W. W. Seay | Nov. 30, 1909 |
| 950,463, W. Cooper | Feb. 22, 1910 |
| 953,772, W. Pfeiderer and W. W. Harris | April 5, 1910 |
| 955,582, W. Cooper | April 19, 1910 |
| 978,557, G. P. Carroll | Dec. 13, 1910 |
| 1,014,120, C. Coleman | Jan. 9, 1912 |
| 1,038,221, D. C. Smith | Sept. 10, 1912 |
| 1,048,800, A. E. Bosse | Dec. 31, 1912 |
| 1,054,167, A. E. Bosse | Feb. 25, 1913 |
| 1,104,665, J. Hamerley | July 21, 1914 |
| 1,122,603, W. J. Kelly | Dec. 29, 1914 |
| 1,126,482, C. E. Molesworth | Jan. 18, 1915 |
| 1,186,463, H. E. Wiles | June 6, 1916 |
| 1,207,130, M. Boyd | Dec. 5, 1916 |
| 1,222,642, E. C. Loetscher | April 17, 1917 |
| 1,237,303, C. Cortesi, E. Prassone, E. Erani & A. Contin | Aug. 21, 1917 |
| 1,242,515, A. M. Brett | Oct. 9, 1917 |
| 1,246,280, H. M. Klingefeld | Nov. 13, 1917 |
| 1,250,218, W. Pfeiderer | Dec. 18, 1917 |

Sub Class 120 Absorbing-Still Condensing-Expander

Cooling apparatus having a still for generating the gas and also acting as an absorber of gas when the expander is performing its cooling function and an expander that acts as a condenser when the still is generating gas.

| | |
|--------------------------------|----------------|
| Re. 5,287, F. P. E. Carre | Feb. 18, 1873 |
| 235,950, O. Kropp | Dec. 30, 1880 |
| 518,791, J. Scheuercker | April 24, 1894 |
| 681,314, W. W. Harris | Aug. 27, 1901 |
| 828,530, W. Brothers | Aug. 14, 1906 |
| 958,683, C. Wagener | May 17, 1910 |
| 992,560, R. V. Heuser | May 16, 1911 |
| 1,017,695, C. Sensesbrenner | May 20, 1912 |
| 1,079,334, W. Graaff | Nov. 25, 1913 |
| 1,082,944, W. Graaff | Dec. 30, 1913 |
| 1,088,518, L. Bichler | Feb. 24, 1914 |
| 1,097,312, W. Graaff | May 19, 1914 |
| 1,169,675, W. Pfeiderer | Jan. 25, 1916 |
| 1,404,457, F. E. Matthews | Jan. 24, 1922 |
| 1,467,053, L. Mach | Sept. 4, 1923 |
| 1,467,462, A. F. Von Codelli | Sept. 11, 1923 |
| 1,472,432, R. W. Davenport | Oct. 30, 1923 |
| 1,473,142, F. O. Conill | Nov. 6, 1923 |
| 1,503,482, F. O. Conill | Jan. 6, 1925 |
| 1,564,705, W. W. Odell, et al. | Dec. 8, 1925 |
| 1,565,231, E. Rumpfer, et al. | Dec. 8, 1925 |
| 1,568,476, C. Sensesbrenner | Jan. 5, 1926 |
| 1,602,147, C. De Laygue | Oct. 5, 1926 |
| 1,602,148, C. De Laygue | Oct. 5, 1926 |
| 1,609,145, P. Vanillau | Nov. 20, 1926 |

Sub Class 121 Gas Solidifiers

Apparatus for solidifying gas by low temperatures, with or without pressure.

| | |
|-------------------------|----------------|
| 579,862, H. S. Elworthy | Mar. 30, 1897 |
| 947,382, J. C. Gosmann | Jan. 25, 1910 |
| 955,454, W. J. Fleming | April 19, 1910 |
| 1,018,568, H. P. Julius | Feb. 27, 1912 |
| 1,546,681, T. B. Slate | July 21, 1925 |
| 1,546,682, T. B. Slate | July 21, 1925 |

Sub Class 122 Gas Liquefiers and Separators

Means for liquefying gas or for liquefying and separating gases of different specific gravities by cooling.

| | |
|--|----------------|
| 120,977, W. F. Johnston and W. A. Johnston | Nov. 14, 1871 |
| 120,978, W. F. Johnston and W. A. Johnston | Nov. 14, 1871 |
| 320,305, J. J. Suckert | June 16, 1885 |
| 320,306, J. J. Suckert | June 16, 1885 |
| 320,307, J. J. Suckert | June 16, 1885 |
| 320,308, J. J. Suckert | June 16, 1885 |
| 405,451, F. W. Wolf | June 18, 1889 |
| 506,639, R. Knetsch | Oct. 10, 1893 |
| 518,361, O. Zwietsch | April 17, 1894 |
| 620,312, W. Hampson | Feb. 28, 1899 |
| 621,536, O. P. Ostergen and M. Burger | Mar. 21, 1899 |
| 621,537, O. P. Ostergen and M. Burger | Mar. 21, 1899 |
| 622,936, J. R. Whiting and W. A. Lawrence | April 11, 1899 |
| 652,058, C. E. Tripler | June 19, 1900 |
| 652,304, C. E. Tripler | June 19, 1900 |
| 666,303, F. P. Pictet | Jan. 29, 1901 |
| 677,323, R. P. Pictet | June 25, 1901 |
| 698,362, B. Borland | April 22, 1902 |
| 710,957, F. L. Dyer | Oct. 14, 1902 |
| 711,419, F. L. Dyer | Oct. 14, 1902 |
| 718,572, C. Joly | Jan. 13, 1903 |
| 728,173, C. Linde | May 12, 1903 |
| 749,049, H. Dumas | Feb. 16, 1911 |
| 755,525, C. Linde | July 25, 1905 |
| 809,218, R. P. Pictet | Jan. 2, 1906 |
| 815,544, C. Linde | Mar. 20, 1906 |
| 815,601, C. Linde | Mar. 20, 1906 |
| 831,176, G. Claude | Mar. 10, 1908 |
| 904,030, W. L. Wolf | Jan. 5, 1909 |
| 918,580, R. P. Pictet | April 20, 1909 |
| 927,594, J. F. Place | July 13, 1909 |
| 933,976, L. L. Gray | Sept. 14, 1909 |
| 954,268, H. Dumas | April 5, 1910 |
| 962,836, G. Hildebrandt | June 28, 1910 |
| 963,555, G. Hildebrandt | July 5, 1910 |
| 984,030, W. P. Schneider | May 28, 1912 |
| 1,027,069, W. P. Schneider | May 28, 1912 |
| 1,074,094, H. Blau | Sept. 23, 1913 |
| 1,074,106, H. Dumas | Sept. 30, 1913 |
| 1,119,159, G. Hildebrandt | Dec. 1, 1914 |
| 1,120,670, R. D. Bassett | Dec. 15, 1914 |
| 1,142,275, E. Schill | June 8, 1915 |
| 1,142,525, G. C. Haag | June 8, 1915 |
| 1,149,254, H. Dumas | July 13, 1915 |
| 1,149,254, H. Dumas | Aug. 10, 1915 |
| 1,150,454, A. E. Roberts | Aug. 17, 1915 |
| 1,150,837, H. L. Doherty | Aug. 17, 1915 |
| 1,189,711, W. E. Lumms | July 4, 1916 |
| 1,199,700, G. Hildebrandt | Sept. 26, 1916 |
| 1,201,043, M. Hazard-Flamand | Feb. 10, 1917 |
| 1,204,521, H. Von Fleet | Nov. 14, 1916 |
| 1,205,478, J. F. Place | Nov. 21, 1916 |
| 1,211,125, G. P. Fonda | Jan. 2, 1917 |
| 1,215,957, R. Mewes | Feb. 13, 1917 |
| 1,225,574, G. L. J. Cabot | May 8, 1917 |
| 1,240,397, L. H. Flippo & P. Schoonenberg | Sept. 18, 1917 |
| 1,257,470, H. Flippo & P. Schoonenberg | Feb. 26, 1918 |
| 1,283,472, C. F. Crommett | Nov. 5, 1918 |
| 1,326,961, J. F. Place | Jan. 6, 1920 |
| 1,327,906, A. B. Cross | Jan. 13, 1920 |
| 1,328,680, W. R. McGinnis | Jan. 20, 1920 |
| 1,334,034, F. E. Norton | Sept. 28, 1920 |
| 1,354,059, F. E. Norton | Sept. 28, 1920 |
| 1,371,427, A. N. Kerr | Mar. 15, 1921 |
| 1,379,102, E. A. Jefferies | May 24, 1921 |
| 1,394,955, M. Von Recklinghausen | Oct. 25, 1921 |
| 1,395,466, E. A. Barbet | Nov. 1, 1921 |
| 1,403,723, M. Von Recklinghausen | Jan. 17, 1922 |
| 1,418,015, F. E. Norton | Sept. 19, 1922 |
| 1,429,808, P. E. Haynes | Sept. 19, 1922 |
| 1,471,833, H. N. Davis | Oct. 23, 1923 |
| 1,501,415, J. G. Lafferty | July 15, 1924 |
| 1,510,178, W. Lachmann | Sept. 30, 1924 |
| 1,510,793, R. Mewes | Oct. 7, 1924 |
| 1,513,116, J. G. Lafferty | Oct. 28, 1924 |
| 1,562,915, C. E. Reddon, et al. | Nov. 24, 1925 |
| 1,604,245, C. L. Schilt | Oct. 26, 1926 |

Sub Class 123 Gas Liquefiers and Separators, Expansion Motor

Apparatus for liquefying or separating gas by cooling, having a motor in which the gas is expanded.

| | |
|-----------------------------------|----------------|
| 163,376, W. N. Hill | May 18, 1875 |
| 579,862, H. S. Elworthy | Mar. 30, 1897 |
| 627,696, J. E. Johnson Jr. | June 27, 1899 |
| 642,505, E. C. Thrupp | Jan. 30, 1900 |
| 647,514, O. P. Ostergen | April 17, 1900 |
| 650,608, T. J. McGinty | May 29, 1900 |
| 679,907, O. P. Ostergen | Aug. 6, 1901 |
| 688,004, O. P. Ostergen | Dec. 3, 1901 |
| 711,525, J. F. Place | Oct. 21, 1902 |
| 743,349, E. C. Thrupp | Nov. 3, 1903 |
| 830,613, R. P. Pictet | Sept. 11, 1906 |
| 895,192, J. F. Place | Aug. 4, 1908 |
| 908,644, G. A. Bobrick | April 13, 1909 |
| 924,137, G. A. Bobrick | June 8, 1909 |
| 933,462, J. E. Johnson Jr. | Sept. 7, 1909 |
| 967,104, G. Claude | Aug. 9, 1910 |
| 978,935, J. F. Place | Dec. 20, 1910 |
| 982,225, E. F. Gaudet | Jan. 17, 1911 |
| 984,875, A. C. Wood | May 28, 1912 |
| 1,027,863, C. Von Linde | May 28, 1912 |
| 1,088,052, E. F. Aumont | Feb. 24, 1915 |
| 1,123,588, J. F. Place | Jan. 5, 1915 |
| 1,264,399, P. Jones | April 30, 1918 |
| 1,354,380, C. F. & O. J. Crommett | Sept. 28, 1920 |
| 1,420,626, H. N. Davis | April 14, 1925 |
| 1,489,395, F. E. Norton | April 14, 1925 |
| 1,538,801, P. Heylandt | April 14, 1925 |
| 1,549,236, C. C. Van Nuyes | Aug. 11, 1925 |
| 1,604,248, C. C. Van Nuyes | Oct. 26, 1926 |
| 1,604,249, C. C. Van Nuyes | Oct. 26, 1926 |

Sub Class 124 Liquid Separators

Apparatus for separating liquids by cooling.

Cross Licensing of Patents Forecast in Electrical Industry

(Reprinted from Electrical Record)

Possible cross licensing of patents in the electrical manufacturing industry was forecast in a resolution adopted by the Policies Division of the National Electrical Manufacturers' Association in its initial meeting, March 18, at Briarcliff Manor, N. Y.

Presidents and chief executives from the foremost electrical companies authorized the president of the Association, Gerard Swope, to appoint a committee to investigate the situation regarding patents

WHY I LIKE THE ELECTRIC REFRIGERATOR

One of a Series of Interviews the Society for Electrical Development Has Had With People Who Speak from Their Own Experience.

Because It Will Do So Many Things for the Homemaker

By Shirley Eleanor Dane

"Come and gaze at the beautiful present I gave Bill for his birthday," said Mrs. H., when I dropped in the other day for tea. Out in the kitchen the present turned out to be a shiny big electric refrigerator, which my hostess admitted she had chosen because she and not her husband wanted one. To explain this unusual gift she said:

"You know, I keep house and cook for a particular brother, as well as a husband. Men must be kept good natured, and one way is to give them all they want to eat, served as they like it and whenever they feel inclined to forage. I never know when a gang of 'boys' will descend on this kitchen, so I must cook in advance. I'm now sure things will keep and my labor will not be in vain. Then suppose they want to have a little stag party. I have the materials ready to make up a 'platter supper': stuffed eggs, cold cuts, little imported sausages, cheese, olives, lots of things men like, all arranged on one big silver platter. Ginger ale, icy cold, and even an extra supply of ice cubes. The men have no trouble serving or eating, and I get an evening off.

Always Enough Ice Cubes

"I can see you're bursting to ask about the extra ice cubes. It's easy if you plan a little. You know, three sets of ice cubes in twenty-four hours are perfectly possible from an electric refrigerator. Usually when lunch is over, I empty two or three trays of cubes into an aluminum colander, which I stand on a plate on the very coldest shelf, directly under the chilling unit, and replace the trays, and find the 'stored' cubes but slightly melted by the time the second lot is frozen. In this way I am prepared for any emergency demand for more ice.

Refrigeration vs. Incubation

"Another source of great pleasure to my cream-loving family is that even thunder storms at their worst fail to sour cream, so we can have a pint or more on hand, and if it isn't used for four or five days, there is no loss. Food spoilage is due to the growth of bacteria, which are microscopic plants, and they love a damp warm place where they can settle comfortably down and in the shortest time raise the largest families. Not being happy in a temperature under 50 degrees, they stay dormant, our food keeps fresh and sweet. Inasmuch as electric refrigeration temperatures average 45 degrees or colder, we are assured of having a refrigerator and not an incubator in the home. People have been taught to demand and expect that our milk should come from rigidly inspected dairies, but too many of us don't take proper care of it after it is delivered.

Saving Current

"At first I used to open the doors while I stood and admired the beautiful interior of my refrigerator—at the same time pondering over its contents, trying to make up my mind whether there was enough cold meat to slice for dinner, or if I'd use the left-over vegetables for salad or drown them in the soup pot. Now I do my planning with the doors closed, and I've learned never to put anything away until it is thoroughly cooled. You'd be surprised how low is the cost of refrigeration to people who are careful about such little things.

"Vegetables that reach you limp and tired after a long trip up from the South, can be brought to life and be made temptingly crisp just by letting them stand for an hour in a bowl of ice cold water in the electric refrigerator. As soon as they crisp up, I shake off the water and put them in a tightly covered dish and they keep in perfect condition.

"One more thing I must show you. Having the machinery down here in the cellar, I wanted to protect it from the dust a little, so I bought a cheap kitchen table (\$6.25 to be exact) and set it over the unit as a cover. There is no lack of air to cool the motor and at the same time it is a lot of protection for the machinery.

"I could go on for hours, singing my song of praise, but you came for tea, so we'll try out the new ice box cake, which should by its own merits convert you forever to electric refrigeration."

MORE STRAIGHT-EIGHT SALESMEN WANTED

By B. C. Reber

Not within recent years has so great an opportunity been created for alert, aggressive salesmen than that which is to be found in the field of electric refrigeration. Coming at a time when there is an immense building program under way, coming at a time when the world demands convenience, it is doubtful if such an opportunity ever before existed.

The field of electric refrigeration is not one which has been worked and worked and must depend upon repeat sales for its business. It is not one which will be popular today and gone tomorrow. It is a practical means of sustaining food values in the most logical, convenient and economical manner. It is a field which is entirely new. It is an industry that is entirely within its infancy so far as new business is concerned.

The rapid growth of the electrical industry has been such that there is hardly a hamlet that does not enjoy electric lights in its homes—electric power in its industries. Thus, it can be seen, there are no excuses because of lack of power.

Nor is this an industry which calls for men looking for an easy job. It is not for those who wish to skim off the cream and leave the dregs for those to follow. It is for men with vision and perseverance, who can go out in the territory with a message that is new; with an offer which is a service.

The entire south below the Mason and Dixon line has warm weather much of the year. There is a constant demand for a service which will keep foods and beverages the year 'round without constant attention. Small retail merchants have already appreciated the value of electric refrigeration, and many progressive stores have already installed these units or are making preparations to do so. Men of vision, who have built homes during the past year or so, have been quick to appreciate the value of electric refrigeration, and have specified it in the plans.

There are tens of thousands of home builders who have been watching the development of electric refrigeration with interest. They are considering putting it in their homes. They are waiting for some man to show them how much such a unit will mean to their comfort and happiness.

There are hundreds of builders who are already specifying electric refrigeration in their model homes. They have been quick to see its value. They have been quick to see public appreciation. There are few, indeed, who even take the trouble to dig up an argument against these products. The cost is nominal in a day where people have been educated to buy bigger and better merchandise on easy installments. The field then is one of the best that has ever been born for the salesman who can deliver the goods.

Those who are in on the know will readily admit it is not a field but for those who can work. Rich profits come only from rich effort. The gold which is panned out of the hills brings a fortune to the prospector, but he must make many sacrifices before he reaps his reward. The same principle applies to the salesman of electric refrigeration. He enters a new field prospecting for business. If he will work hard enough the returns will be great; but it requires real men, straight-eight salesmen!

"Fundamentals of Electric Refrigeration Explained"

On account of the widespread interest in the article entitled, "Fundamental Principles of Refrigeration Explained," written by C. F. Ryan, Jr., and J. F. Hendrickson, and which appeared in a recent issue of ELECTRIC REFRIGERATION NEWS, the article has been reprinted in attractive booklet form and will be distributed at the N. E. L. A. convention. A number of distributors have indicated their desire to furnish copies of this article to members of their organization. Ten copies of the booklet will be sent postpaid for \$1.00.

New Apartments for Students Families To Contain Electric Refrigeration

The Bartlett-Brainard Company, Hartford, Conn., general contractors, have started work on the apartment building for the Hartford Seminary Foundations. Accommodations will be provided for 12 families of students. Allen & Collens, Boston, Mass., prepared the specifications which include electric refrigeration.



A. E. BOTTONFIELD

A. E. Bottonfield has joined the forces of the Norge Corporation, Detroit, manufacturers of electric refrigeration, as general sales manager.

Mr. Bottonfield is one of the pioneers in electric refrigeration sales work. His first connection with the industry was in Peoria, nine years ago.

Later he became connected with one of the older companies as their distributor in the Pittsburgh territory. Here he established an enviable record, through the building, in a very short time, of a dealer organization that was remarkable not only for its size, but for its energy and activity.

In forming his connection with the Norge Corporation, he brings to his new work a broad knowledge of electric refrigeration and a wide acquaintance with electric refrigeration dealers.

FEDERAL RADIO COMMISSION
COMMERCE BUILDING
WASHINGTON, D. C.

"I have had a brief opportunity to read over with a great deal of interest your last two issues and congratulate you on the splendid journalistic job you are turning out. Your publication smacks of authority, timeliness and completeness, and I feel sure that the industry which it serves is recognizing it in an increasing extent."—O. H. Caldwell, Commissioner.

Electric Refrigerator Directory to be Visualized in N. E. L. A. Exhibit

ELECTRIC REFRIGERATION NEWS will present an interesting exhibit in Booth No. 167-A at the N. E. L. A. convention in Atlantic City, June 4 to 10. A map of the United States will be shown on which will be located all of the manufacturers of electric refrigeration equipment, cabinets, accessories and materials, as listed in the directory published in this issue.

Society for Electrical Development Moves Headquarters

On May 1 headquarters of the Society for Electrical Development were moved from 522 Fifth Avenue to the Graybar Building, at 420 Lexington Avenue, New York.

This new building is a unit of the Grand Central Terminal group, and the Society is particularly fortunate in securing premises so conveniently located and so well suited to the conduct of its operations.

In extending a cordial invitation to the electrical industry to visit the new offices, the directors take this opportunity of reminding the industry that the services of the Society are at their command.

Paper Well Worn by Passing Through So Many Hands

"We are very highly interested in the article in your May 11th issue entitled 'Fundamental Principles of Refrigeration Explained'.

"Will you please furnish us with preceding copies of your issues which contain the first and second articles of which the one in the May 11 issue is the third?"

"The copy of your publication passes through so many hands that it is pretty well worn by the time it is ready for filing."—W. E. Burch, Sherer-Gillett Co., 17 South Clark Street, Chicago, Ill.

Thoroughly Enjoys Every Issue

"I thoroughly enjoy every issue of the News and do not want to miss one publication. I hope that you will grow as fast in the future as you have in the past."—H. A. Cheatham, district representative, electric refrigeration department, General Electric Company.

Write for prices of condenser coils formed to your specifications.

WOLVERINE TUBE COMPANY

1431 Central Ave., Detroit, Mich.

WOLVERINE
SEAMLESS COPPER AND BRASS TUBING

BRINE TANKS • HOUSEHOLD AND COMMERCIAL SIZES

SPECIAL SIZES AND EXPERIMENTAL TANKS

Equipped to Give Immediate Service for Anything in Sheet Metal

E. W. KREIDER COMPANY

Halfway, Michigan

A Suburb of Detroit

THERMOSTATS

Automatic Controls for Refrigeration and Oil Burners

SHAFT SEALS—FLOATS

LIGHT STAMPINGS

HIGH PRESSURE

CUT-OUTS

GOODNOW & BLAKE MFG. CO.

3840 BEAVER STREET

DETROIT, MICH.

REFRIGERATION STAMPINGS

We Specialize in the Design and Manufacture of

ICE CREAM CABINETS

We make them complete or furnish parts separately

Brine Tanks

Cooling Units

Unit Supporting Bases and Perforated Metal Covers

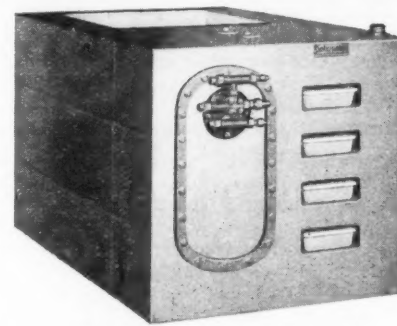
METAL HOUSEHOLD REFRIGERATORS (Complete) OR CAN FURNISH OUTSIDE STEEL PANELS, INSIDE LININGS, LOUVERED PANELS, LEGS, ETC., SEPARATELY

We Have a Competent Engineering Staff to Help You

We Solicit Your Inquiries and Specifications

MOTORS METAL MFG. CO.

DETROIT MICHIGAN



WILDER METAL
Has Proven Superior
for Commercial
Brine Tanks

—INSURES—
Permanence against corrosion
at minimum cost

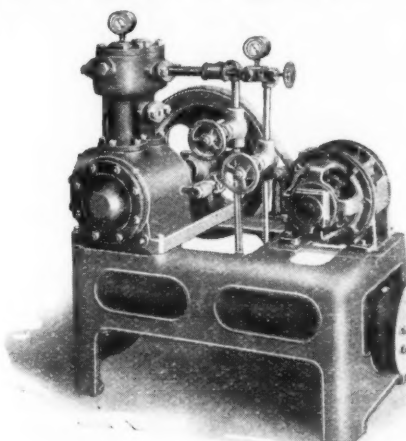
Kelvinator-Nizer standard
Commercial Freezing Tanks
Constructed from Wilder Metal

Prompt shipment of standard
gauges and sizes
from warehouse stock

SAMPLES FURNISHED ON REQUEST

WILDER METAL CO.
NILES, OHIO

COMPLETE YOUR LINE



Increase
your sales by
installing

Wolfe
Refrigerating
Machines

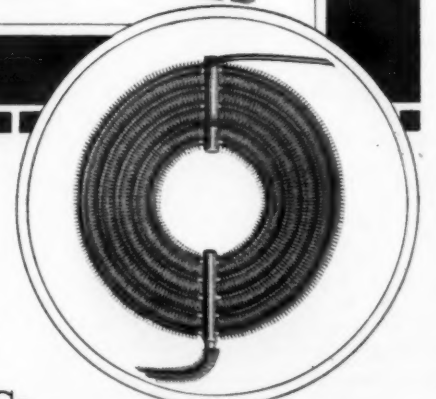
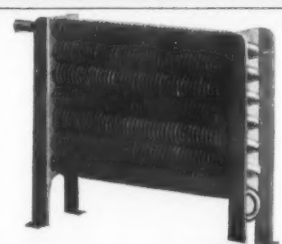
Write for Agent's
Proposition

Wolfe Ammonia Compressors are made in sizes
of 1/4-ton to 10-ton capacity

WOLFE ENGINEERING & MFG. CO.
1410 Vernon Street, HARRISBURG, PA.

McCORD BUILT CONDENSERS

EFFICIENCY
ECONOMY
DEPENDABILITY



McCord's 25 years' automotive radiator building experience is incorporated in McCord condensers. They combine efficiency in operation, along with dependability to a degree that has resulted in their being adopted as standard equipment by a number of leading refrigerator builders.

McCord Engineers and the McCord laboratory are at your disposal in solving condenser problems.

McCord Radiator & Mfg. Co.
Detroit, Mich.

ELECTRO-KOLD
The Simplest Electric Refrigerator

HOME OFFICE AND FACTORY
SPOKANE, WASHINGTON

Electric Refrigeration Directory

Section 1—Manufacturers of Electric Refrigerators for Household or Commercial Use. (See Section 2 for Manufacturers of Cabinets Only. See Section 3 for Manufacturers of Parts and Accessories)

American Engine and Airplane Co., Los Angeles, Cal.
Manufacturers of household electric refrigerator and control devices.
Ralph M. Burdick is president.

American Engineering Co., Kensington Station, Philadelphia, Pa.
Manufacturers of JURNICK commercial, ice cream and soda fountain units.
Maxwell Alpern, president; W. V. Santer, vice-president; C. L. Cushman, secretary and treasurer; H. L. Lewis, sales manager refrigeration department; J. G. Worker, general sales manager; H. L. Lewis, sales manager refrigeration; J. M. Combs, advertising manager; E. W. Scharninghausen, purchasing agent; H. A. Peck, works manager; O. A. Johnson, factory engineer.

Audiffren Refrigerating Machine Co., 285 Madison Ave., New York, N. Y.; factory at Jersey City, N. J.

Manufacturers of AUDIFFREN electric refrigerators for household and commercial use.

E. T. Hargrove, president; K. D. Perkins, vice-president and treasurer.

Baker Ice Machine Co. Inc., 3601 N. 16th St., Omaha, Nebr.

Manufacturers of BAKER SYSTEM electric refrigeration units for commercial, ice cream and soda fountain use, pumps and compressors, coils.

J. L. Baker, president; Charles Knox, vice-president; F. J. Vette, secretary; C. A. Baker, treasurer; L. W. Morris, sales manager; R. C. Hudson, advertising and sales promotion manager; C. A. Baker, purchasing agent; Charles Knox, chief engineer; J. H. Coesfeld, superintendent.

Belding-Hall Electric Corporation, Belding, Michigan.

Manufacturers of ELECTRIC household and commercial refrigerator units.

Arthur E. Swanson, president; A. L. Cash, vice-president and general manager; B. F. Hall, vice-president and treasurer; R. H. Hall, vice-president and sales manager; G. D. Weter, secretary; C. W. Coye, advertising manager; D. W. Hamilton, chief engineer and production manager; S. D. J. Dunlop, sales promotion manager.

Brunswick-Kroeschell Co., Jersey Ave., New Brunswick, N. J.

Manufacturers of BRUNSWICK commercial electric refrigerators, other control devices.

James W. Johnson, president; Sydney B. Carpenter, vice-president and general manager; Arnold H. Goetz, vice-president and chief engineer; Robert A. Kroeschell, secretary and sales manager; William Carpenter, treasurer; H. Harrison, advertising manager; Walter Jones, production manager.

Castle Refrigerating Machine Co., 138 Neal St., Indianapolis, Ind.

Manufacturers of complete units for commercial use, 2 to 15 tons; electric refrigeration equipment for ice cream manufacturing; ammonia condensers; brine tanks for commercial use.

O. H. Castle, manager and owner.

Champion Electric Co., division of Champion Shoe Machinery Co., 3711-41 Forest Park Ave., St. Louis, Mo.

Manufacturers of CHAMPION ELECTRO ICER machines for household and commercial use, motors, pumps and compressors, condensers and expanders.
Geo. A. Dobyne, president; S. A. Dobyne, general manager; Stanley C. Bell, sales and advertising manager; Charles Vogler, purchasing agent; S. A. Dobyne, chief engineer.

Climax Engineering Co., 4th St. at 18th Ave., Clinton, Iowa. Subsidiary of the G. W. Dulany Trust, Chicago, Ill.

Manufacturers of CLIMAX electric refrigeration units for household, commercial, ice cream and soda fountain use, pumps and compressors.

G. W. Dulany, Jr., president, Chicago, Ill.; E. P. Denkan, vice-president, Rock Island, Ill.; J. M. Thomsen, secretary, Chicago, Ill.; M. M. Cruise, treasurer, Chicago, Ill.; R. C. Rowan, general manager, Clinton, Iowa; R. L. Alexander, manager refrigeration department; J. N. Palmer, advertising refrigeration department; Walter Johnson, purchasing agent; R. L. Alexander, chief engineer.

Clover-Olson Refrigerator Co., 6551 San Pablo Ave., Oakland, Calif.

Manufacturers of CLOVER-OLSON electric refrigerators for household, commercial, ice cream and soda fountain use; pumps and compressors; float valves, automatic pressure controls; ammonia machine to 6-ton capacity.

E. F. Clover, president; C. F. Olson, sec.-treas.; D. P. Eicke, vice-president.

Coldak Corp., 8 West 40th St., New York, N. Y. Factories at Springfield, Mass.; Providence, R. I., and Muskegon, Michigan.

Manufacturers of COLDAK electric refrigerators for household and commercial use.

J. H. Pardee, president; A. P. de Saas, vice-president; C. M. Burnhome, vice-president; T. W. Moffatt, treasurer and secretary; E. J. Rock, assistant treasurer; H. B. Brown, assistant treasurer and assistant secretary; J. J. Kehoe, assistant secretary; J. J. West, sales manager; W. R. Wilson, purchasing agent; Hazon J. Smith, chief engineer; Walter Reed, service manager.

Cooke Electric Refrigeration Co., 14-30 N. Green St., Chicago, Ill.

Manufacturers of COOKE household, commercial and ice cream cabinets.

George J. Cooke, president and treasurer; George J. Cooke, Jr., vice-president; Robert E. Cooke, secretary.

Copeland Products, Inc., Detroit, Mich.

Manufacturers of COPELAND commercial and household refrigerators; water coolers; pumps and compressors; tubing condensers and expanders; thermostats; float valves; other control devices.

William Robert Wilson, president; George W. Mason, vice-president; Edwin H. Brown, secretary and treasurer; D. E. Knowles, assistant secretary, treasurer and comptroller; W. D. McElhinny, vice-president in charge of sales; George W. Mason, vice-president and general manager; A. M. Taylor, advertising and sales promotion manager; B. P. Watkins, purchasing agent; Glen Muffy, chief engineer; S. W. Taylor, factory manager; M. B. Ellis, service manager.

Electro-Kold Corp., 151 S. Post St., Spokane, Wash.

Manufacturers of ELECTRO-KOLD electric refrigeration units for household and commercial use; pumps and compressors; float valves; control devices.

X. L. Anthony, president; L. J. Kimmel, vice-president; E. S. Matthews, secretary-treasurer; C. L. Lewis, general manager; E. S. Matthews, sales manager; H. L. Masterson, advertising manager; D. W. Mather, purchasing agent; L. J. Kimmel, chief engineer.

Everite Products, Inc., Dayton, Ohio.

Manufacturers of EVERITE household electric refrigerators and commercial units; water coolers; other control devices.

F. C. Geiler, president; B. K. Williamson, vice-president; J. A. Wortman, secretary and treasurer.

Frigidaire Corp., Dayton, Ohio. Subsidiary of General Motors Corp., Detroit, Mich.

Manufacturers of electric refrigerators for household, commercial, ice cream, soda fountain, water coolers and other special applications.

E. G. Biechler, president; R. D. Funkhouser, vice-president; C. F. Kettering, vice-president; H. W. Prior, general sales manager; J. A. Harlan, household sales manager; C. A. Copp, commercial sales manager; E. D. Doty, advertising manager; L. S. Keilholtz, chief engineer; Thos. B. Fordham, works manager.

General Electric Co., Electric Refrigeration Dept., Hanna Bldg., 1400 Euclid Ave., Cleveland, Ohio. Factories at Schenectady, N. Y., and Fort Wayne, Ind.

Manufacturers of GENERAL ELECTRIC household electric refrigerators; motors for household and commercial machines.

T. K. Quinn, manager; P. B. Zimmerman, sales manager; W. J. Daily, sales promotion manager; L. R. Edwards, advertising manager; C. E. Eveleth, works manager, Schenectady; Walter Goll, works manager, Fort Wayne.

General Necessities Corp., 1560-78 Theodore St., Detroit, Mich.

Manufacturers of ABSOPURE FRIGERATORS for household, commercial, ice cream and soda fountain use; water coolers; thermostats.

David A. Brown, president; H. J. Redwood, first vice-president; C. U. Carpenter, third vice-president and general manager; E. E. Von Rosen, secretary and treasurer; W. Peck, secretary; W. M. Cutler, assistant sales manager; E. W. Wentworth, advertising manager; T. F. Moran, purchasing agent; H. C. Hayes,

chief engineer; H. D. Dargert, factory manager; T. S. Pendergast, assistant engineer and service manager.

General Refrigeration Co., Beloit, Wis. Factory at South Beloit, Ill.

Manufacturers of LIPMAN commercial electric refrigerators; water coolers; condensers and expanders; coils and other control devices.

T. E. Swords, president; J. R. Morash, vice-president and general manager; J. J. Tynola, secretary; George O. Forbes, treasurer; C. A. Pearson, sales manager; W. C. Moore, advertising manager; J. E. Churm, purchasing agent; F. E. Dennison, chief engineer.

Kelvinator, Inc., Plymouth Road, Detroit Michigan. Subsidiary of Electric Refrigeration Corp. Factories at Detroit and Grand Rapids, Mich.

Manufacturers of KELVINATOR electric refrigerators for household and commercial use, NIZER ice cream and soda fountain units and cabinets, LEONARD refrigerator cabinets, water coolers; other special applications.

A. H. Goss, president; C. W. Matheson, H. W. Burritt, H. A. Sieck, A. H. Jaeger and H. A. Lewis, vice-presidents; M. Wiley, secretary; B. A. MacDonald, treasurer; C. K. Matheson, director of sales; Gordon W. Kingsburg, director of advertising; George M. Dwelley, sales promotion manager; A. A. Morell, purchasing agent; C. C. Spreen, chief engineer; W. D. Mercer, factory manager; E. A. Seibert, service manager; Gordon Muir, Nizer advertising manager.

Iron Mountain Co., 939-1011 E. 95th St., Chicago, Ill.

Manufacturers of ZEROZONE commercial and household electric refrigerators, electric refrigeration units for ice cream, soda fountains, water coolers and other special appliances.

C. E. Jernberg, president; O. H. Anderson, vice-president and general manager; L. C. Keely, vice-president in charge of sales; A. C. Moreland, sales manager; E. C. Lovegren, sales promotion manager; G. G. Hawley, purchasing agent; W. E. Bihl, chief engineer; Nels Anderson, factory manager; R. F. Palley, service manager.

The Iroquois Electric Refrigeration Co., 1500 Arch St., Philadelphia, Pa. Associate of the Barber Asphalt Co. Factory at Buffalo, N. Y.

Manufacturers of IROQUOIS household electric refrigerators; pumps and compressors; condensers and expanders; float valves; other control devices.

Arthur W. Sewall, president; Frank Seamans and C. W. Bayliss, vice-presidents; E. R. Riter, secretary; Ira Atkinson, treasurer; C. W. Bayliss, sales manager; W. F. Hartzell, advertising manager; F. A. Browne, chief engineer; A. L. Bell, works manager.

The Isko Company, 2525 Clybourn Ave., Chicago, Ill.

Units. F. B. Lay, general manager.

Jack Frost Ice Machine Co., Ltd., 347 Sorauren Ave., Toronto, Canada.

Manufacturers of JACK FROST household and commercial electric refrigerators, complete units for ice cream and soda fountain use, water coolers, soft drink cabinets.

John G. O'Brien, president; F. Mayhew, vice-president; G. Argument, secretary and treasurer; John C. O'Brien, general manager; Fred C. Baker, manager of sales; T. L. O'Brien, general superintendent; W. Thornton, assistant superintendent in charge of installation and service.

Keokuk Refrigerating Co., Keokuk, Iowa.

Manufacturers of KEOKUK household and commercial electric refrigerators, thermostats; other control devices.

G. E. Weissenburger, president; John Dillon, vice-president; J. O. Boyd, secretary and treasurer; G. E. Weissenburger, general manager and purchasing agent; John Dillon, sales and advertising manager; G. L. Weissenburger, chief engineer.

Keystone Refrigeration Corp., Beaver Falls, Pa.

Manufacturers of KEYREX household and commercial refrigerator units.

W. B. Atwood, president; J. B. Easter, vice-president; G. W. Kilpatrick, secretary and treasurer; W. B. Atwood, general manager; J. B. Easter, sales manager; H. S. Michael, chief engineer.

The Lamson Co., subsidiary of American Pneumatic Service Co., Syracuse, New York. Manufacturers of ICE MAID household, ice cream and soda fountain machines.

W. F. Merrill, president; H. F. Robinson, secretary; T. S. Dutcher, treasurer; Harry W. Alexander, general manager; S. W. Pierce, purchasing agent; Henry Bruggman, chief engineer; H. L. Hull, service manager.

Lindsay, Hyde & Co., 2130 E. York St., Philadelphia, Pa.

Manufacturers of LIHYCO electric refrigerators for household use; tubing. Wm. Geible, sales manager; Wm. J. Maginnis, chief engineer; John Lindsay, works manager.

The Merchant & Evans Co., 2035 Washington Ave., Philadelphia, Pa. Factories at Lancaster and Philadelphia, Pa.

Manufacturers of M. & E. household and commercial electric refrigerators.

Powell Evans, president; Thomas Evans, secretary and general manager; M. P. Stoney, production manager; S. J. Benn, chief refrigeration engineer.

Michigan Refrigeration Co., Inc., 1600 Monroe Ave., Grand Rapids, Mich.

Manufacturers of EL-FRIG-ETTE household electric refrigerator.

Joseph Renihan, president; V. I. Cilley, secretary-treasurer; M. D. Greene, production manager.

Narragansett Machine Co., Vale St., Pawtucket, R. I.

Manufacturers of CHILRITE electric refrigerators for household use.

A. J. Thornley, president; Albert E. Thornley, vice-president; C. A. Bryant, advertising manager.

National Refrigerating Co., branch of Winchester Repeating Arms Co., 125 Munson St., New Haven, Conn.

Manufacturers of ICE-O-LATOR household and commercial electric (and gas operated) refrigerators.

W. A. Tobler, president; E. S. Ensign, vice-president; L. H. Thompson, treasurer (acting sales manager); G. W. Keller, assistant sales manager.

Norge Corp., 670 East Woodbridge St., Detroit, Mich.

Manufacturers of NORGE household electric refrigerator units.

E. E. McCray, chairman of the board; Howard E. Blood, president and general manager; W. C. Rands, vice-president; W. C. Rands, Jr., secretary-treasurer; R. E. Davis, assistant secretary; C. D. Donaven, assistant general manager; A. E. Bottenfield, sales manager; Ira Reindel, chief engineer.

Polaris Electric Refrigerator Co., 417 First St., Logansport, Ind.

Manufacturers of POLARIS electric refrigeration machines for household and commercial use; electric refrigeration equipment for ice cream and soda fountain use.

C. H. Canode, president; J. F. McManus, vice-president; C. C. Darnall, vice-president and general manager; C. W. Church, secretary; H. A. Kraut, treasurer; W. P. Arthur, sales manager; John Dubrovin, chief engineer; G. V. Morse, production manager.

Rice Products, Inc., 100 East 42nd St., New York City, and 315 Beaubien St., Detroit, Mich.

Manufacturers of RICE household and commercial refrigerator units and other control devices.

I. L. Rice, Jr., president; T. E. Carpenter, vice-president and general manager; Julian Rice, secretary; James H. Frazier, advertising manager; Frank R. West, chief engineer.

Sanat Refrigerating Co., 331 Madison Ave., New York, N. Y. Factories at York, Pa.

Manufacturers of SANAT household electric refrigeration units.

Paul H. Buch, president; John E. Ericson, first vice-president; Howard M. Groff, secretary and treasurer; Paul H. Buch, general manager; John E. Ericson, production manager; John F. Coulthurst, service manager.

Savage Arms Corp., Turner St., Utica, N. Y.

Manufacturers of SAVAGE electric refrigerator equipment for ice cream and soda fountain use.

W. L. Wright, president; F. R. Phillips, vice-president; J. H. Cook, secretary; E. A. MacDonald, treasurer; F. F. Hickey, general manager; C. A. Baldwin, manager refrigeration division; R. B. Woolley, advertising manager; J. H. Cook, purchasing agent; F. T. Russell, works manager; W. L. Howlett, service manager; R. W. Ayres, chief engineer refrigeration department.

Servel Corporation, 51 East 2nd St., New York, N. Y. Subsidiary of the Servel Corp. (Delaware). Factory at Evansville, Ind.

Manufacturers of SERVEL household electric refrigerators and electric refrigeration units for commercial, ice cream and soda fountain use.

Frank E. Smith, president; H. P. Childs, vice-president and sales manager; F. S. Fenton, Jr., assistant sales manager; H. W. Foulds, advertising manager; F. P. Nehrba, factory manager; C. A. Miller, service manager.

Our New Home



Maccabees Building

Woodward Avenue at Putnam Street
Detroit

The offices of ELECTRIC REFRIGERATION NEWS are now located in the Maccabees Building, a beautiful new structure located on Woodward Avenue at Putnam Street, facing the group of municipal buildings known as Detroit's Art Center.

The additional floor space and better facilities will make it possible to improve the service of the publication very materially. Subscribers, advertisers and friends are cordially invited to visit the new offices.

NEW BOOKLETS AND LEAFLETS

Mueller Brass

The Mueller Brass Co., of Port Huron, Mich., has sent a folder (8½ x 11), illustrating and describing the fittings and parts manufactured by that company for the electric refrigeration industry.

National Refrigerator

The National Refrigerator Co., 1438 No. Sixth St., Philadelphia, Pa., has issued a large three-color broadside entitled "You'll Prefer a National Refrigerator for Your Meat Market, Grocery, or Delicatessen Store." The broadside contains several large and attractive illustrations of display freezer counters.

Peerless

The Peerless Ice Machine Company, 503-531 So. Jefferson St., Chicago, Ill., has issued a 24-page booklet on Peerless Refrigeration, illustrating commercial automatic ice machine installations in apartment buildings, dairies, hotels, grocery stores, etc. The booklet is loose-leaf and is letter size. The Peerless Company has also sent a loose-leaf catalogue, letter size, illustrating and describing the Peerless controls for automatic ice machines.

Servel

The Servel Corporation, 51 East 42nd Street, New York City, has issued the following booklets:

"How to Choose Your Electric Refrigerator," 16 pages of descriptive literature concerning Servel electric refrigeration units.

"Succeed in 1927 with Servel" (8½ x 11½), 24 pages of reproduced newspaper advertisements, show cards and window displays shown as dealer helps.

"The Flame That Freezes" (5 x 7), 16 pages describing the gas-operated Electrolux Servel machine.

Arctic (Methyl Chloride)

The Roessler & Hasslacher Chemical Co., 709 Sixth Ave., New York City, have sent a 32-page booklet (Technical Paper No. 274) announcing their new refrigerant "Arctic" (methyl chloride). The booklet contains a general discussion of the refrigerant and a performance chart.

Bilt-Rite

The Russ Manufacturing Company, 5700 Walworth Ave., Cleveland, Ohio, has issued catalogues A-F 27 and A-K 27, describing the Bilt-Rite Instantaneous Water Cooler for Frigidaire and Kelvinator applications respectively. The catalogues each contain 32 pages and are 8½x11 inches in size.

Gloekler

The Bernard Gloekler, 1627 Penn Ave., Pittsburgh, Pa., has issued a large folder entitled "Refrigerator Display Cases," showing their latest all-metal Gloekler display case.

Dunning Pump

The Dunning Pump & Mfg. Co., 326 Walnut Street, Philadelphia, Pa., has recently issued a booklet entitled "Refrigeration Equipment," listing and illustrating the compressors and electric refrigeration parts manufactured by that company.

Sanitary Refrigerator Co., Oak Place, Fond du Lac, Wisc.
Manufacturers of SANITARY electric refrigerators for household use.

Socold Refrigerating Corp., 19 Stewart St., Lynn, Mass. Factories at Lynn and Walpole, Mass.

Manufacturers of SOCOLD household electric refrigerators, pumps and compressors.

Louis M. Atherton, president; Arthur F. Bent, vice-president; Charles H. Nevons, secretary and treasurer; Roy H. Booth, sales and advertising manager; Clem M. Batchelder, purchasing agent; Arthur C. MacIntosh, chief engineer; Clifford E. Porter, service manager; Henry E. Ferris, works manager.

Superior Iceless Refrigerator, Inc., Hanna Bldg., Cleveland, Ohio. Factories at Canton, Ohio.

Manufacturers of SUPERIOR household, commercial, ice cream and soda fountain electric refrigerators, complete, water coolers, pumps and compressors, condensers and expanders.

Chas. A. Kolp, president; Edward L. Frantz, executive vice-president; E. E. Quirk, secretary; Frank Zink, treasurer; W. F. Marr, sales manager; C. E. Yates, sales engineer; George Lee Miller, works manager; J. E. Massey, production manager.

The Triumph Ice Machine Co., branch of The Triumph Electric Corp., 110 E. 70th St., Cincinnati, Ohio.

Manufacturers of TRIUMPH household, ice cream and soda fountain electric refrigerating machines, water coolers; motors for commercial machines; pumps and compressors; condensers and expanders; oil interceptors; ammonia condensers; receivers; brine coolers and ammonia fittings.

J. C. Hobart, president; E. W. Hobart, secretary; G. P. Hunt, treasurer; J. C. Hobart, general manager; J. O. Schultz, sales manager; M. L. Block, purchasing agent; J. O. Schultz, chief engineer; J. L. McClure, works manager.

Universal Cooler Corp., 18th and Howard Sts., Detroit, Mich.

Manufacturers of UNIVERSAL COOLER electric refrigeration units for household, commercial, ice cream and soda fountain uses; water coolers; other special applications; pumps and compressors; condensers and expanders.

Patterson Farmer, president; Ford Ballantyne, vice-president; Albert H. Meinke, secretary-treasurer; A. DeB. Gaines, sales manager; H. R. Christensen, advertising manager; Harry Thompson, chief engineer; George Blair, factory manager.

Ward Electric Refrigerator Corp., Buchanan, Mich.

Manufacturers of WARD household and commercial units and cabinets, pumps and compressors.

L. W. Ward, president; Miles Ayrault, vice-president; H. B. Hutchings, secretary-treasurer; A. Humason, sales manager; E. W. Essman, sales promotion manager; D. B. Church, purchasing agent; Miles Ayrault, engineer; H. Schneckenberger, service manager; M. Clay, factory manager.

Warner Stacold Corporation, Ottawa, Kansas. Division of Warner Steel Products Co.

Manufacturers of STACOLD household and commercial refrigerator units.

C. E. Warner, president; A. L. Kitzelman, vice-president; E. L. Warner, secretary and general manager; W. H. Warner, treasurer; G. E. Freeman, sales manager; C. R. Lawson, advertising manager; D. Duffy, chief engineer; W. Judd, production manager; H. K. Pinkerton, service manager.

Whitehead Refrigeration Co., 3724 Woodward Ave., Detroit, Mich. Subsidiary of Whitehead & Kales Co.

Manufacturers of WHITEHEAD household refrigerator units.

T. C. Whitehead, president; H. V. Collins, sales manager; J. R. Weeks, H. Greenwald, engineers.

Welsbach Co., Gloucester, N. J. Subsidiary of United Gas Improvement Co., Philadelphia, Pa.

Manufacturers of WELSBACH electric refrigeration units for household and commercial use; water coolers; other special applications; pumps and compressors; thermostats; chemicals; paint.

Sidney Mason, president; Townsend Stites, vice-president; E. L. Knoedler, vice-president; F. J. Rutledge, vice-president; Paul Thompson, vice-president; G. W. Curran, secretary; I. W. Morris, treasurer and assistant secretary; E. MacMorris, assistant secretary; T. W. MacLary, assistant treasurer, refrigeration division; Howard R. Lukens, general manager; R. R. Thompson, sales manager; A. B. Hatch, manager public utility relations; C. B. Ryan, Jr., manager, service and sales promotion; R. D. Lombard, commercial sales engineer; R. B. Havens, advertising manager; F. A. Wegener, chief engineer; E. L. Knoedler, general superintendent; Whitney Kirk, purchasing agent.

Zero-Aire Corp., 510 N. Dearborn St., Chicago, Ill.

Manufacturers of ZERO-AIRE electric refrigeration units for household, commercial and ice cream and soda fountain use.

W. M. Tippet, president; P. G. Jacobson, vice-president; C. W. Johnson, secretary-treasurer; C. W. Johnson, sales manager; J. H. Kennedy, chief engineer.

Electric Refrigeration Directory Section 2

Manufacturers of Electric Refrigeration Cabinets

The Alaska Refrigerator Company, Muskegon, Michigan.
Manufacturers of ALASKA electric refrigerator cabinets.
J. L. Gillard, general manager.

All Sheet Metal Works, 2949 Elston Ave., Chicago, Ill.
Manufacturers of household, commercial, ice cream and soda fountain electric refrigerator cabinets; water coolers; combination ice cream cabinet and bottle cooler; other special applications; brine tanks and bunkers.

P. J. Wanbach, president; L. C. Campbell, secretary and treasurer.

Arlington Refrigerator Co., Inc., Arlington, Vermont.

Manufacturers of ARLINGTON, ARCO and ARCOSTONE household electric refrigerator cabinets.

John P. Munn, M.D., president; C. M. Rochester, treasurer; A. M. Johnstone, secretary and manager; A. M. Johnstone, general manager; F. E. Merrill, sales manager; R. R. Casey, factory manager.

Banta Refrigerator Company, Clearfield, Pa.

Manufacturers of BANTA commercial cabinets.

L. A. Banta, president; W. A. Walker, vice-president; J. Lewis Irvin, secretary; F. B. Kerr, treasurer; W. H. Walker, general manager; W. B. McBride, purchasing agent; G. F. Banta, superintendent.

Benjamin Electric Mfg. Co., 128 S. Sangamon St., Chicago, Ill. Factory at Desplaines, Ill.

Manufacturers of CRYSTEEL cabinets for household and commercial electric refrigerators; enameling; refrigerator linings; seamless, porcelain enameled.

R. B. Benjamin, president; J. H. Fall, Jr., vice-president and treasurer; W. D. Steele, vice-president and secretary; P. H. Powers, sales manager; E. A. Drake, works manager; E. D. Pellegrin, engineer refrigeration department.

Bohn Refrigerator Company, 1350 University Ave., St. Paul, Minn.

Manufacturers of BOHN SYPHON cabinets for household electric refrigerators.

G. C. Bohn, president; George von Nieda, vice-president; Harold H. Bohn, advertising executive; R. H. Ames, secretary and treasurer.

Brooks Cabinet Co., Inc., 1028 West 27th St., Norfolk, Va.

Manufacturers of BROOKS CABINETS for household, commercial, ice cream and soda fountain electric refrigerators; water coolers.

C. H. Brooks, president; C. T. Brooks, vice-president; J. N. Taylor, sec.-treas.

Bryant Pattern & Mfg. Co., 702-710 St. Antoine St., Detroit, Mich.

Manufacturers of BRYANT cabinets for commercial electric refrigerators and for ice cream and soda fountain use; pumps and compressors; compressors, air and water cooled; ice machine patterns and dies.

A. W. Bryant, vice-president and engineer; E. S. Bryant, secretary-treasurer and manager; A. W. Bryant, purchasing agent; E. J. Mamer, sales and advertising manager; E. S. Bryant, factory manager.

Campbell-Shirk Co., 3200-10 Auer Ave., Milwaukee, Wis.

Manufacturers of cabinets for commercial electric refrigerators.

J. W. Campbell, president; R. F. Campbell, vice-president and treasurer; Earl Shirk, secretary; R. F. Campbell, general manager; Harry Buechler, factory manager.

Challenge Refrigerator Co., Grand Haven, Mich.

Manufacturers of CHALLENGE cabinets for household electric refrigerators.

H. F. Harbeck, president; W. F. Harbeck, vice-president; B. F. Harbeck, secretary-treasurer.

Crystal Refrigerator Co., Fremont, Neb.

Manufacturers of CRYSTAL and WHITE-STEEL household and commercial cabinets.

Frank Hammond, president; Earl R. Hammond, secretary; R. E. Hammond, treasurer.

Fairfield Mfg. Co., 82-106 St. John St., Portland, Me. Factories at Portland and Fairfield.

Manufacturers of EVERCOLD household and commercial electric refrigerator cabinets.

Gilbert Oakley, president; W. E. Parsons, treasurer; J. W. Thomas, sales mgr.

Garland Refrigerator Co., Inc., 101 Park Ave., New York, N. Y. Factory at Mt. Vernon, N. Y.

Manufacturers of GARLAND commercial electric refrigerator cabinets.

M. L. Garland, president; B. F. Garland, treasurer; C. F. Garland, secretary.

Gibson Refrigerator Company, 515 W. Williams St., Greenville, Mich.

Manufacturers of GIBSON cabinets for household and commercial electric refrigerators.

John J. Grothe Co., Inc., 5-7 Conn Ave., Zero Bldg., Woburn, Mass.

Manufacturers of ZERO cabinets for electric refrigerators for commercial and ice cream and soda fountain use; water coolers; mechanical refrigerated truck bodies; special cabinets and storage rooms.

James A. Houston, president; Arthur B. Mackay, vice-president; John E. Burke, secretary and treasurer; A. B. Mackay, general manager; Joseph Robbins, factory and service manager.

Harder Refrigerator Corp., Cobleskill, N. Y.

Manufacturers of KLEEN-KOLD electric refrigerator cabinets.

E. S. Ryder, president; F. H. Ryder, vice-president; G. D. Ryder, secretary-treasurer; F. H. Ryder, general manager; H. L. Merrill, sales manager; G. D. Ryder, advertising manager; E. C. Allen, purchasing agent; A. W. Rowley, chief engineer; G. J. Hopkins, works manager.

Haskelite Manufacturing Corp., 133 W. Washington St., Suite 819, Chicago, Ill. Factory at Grand Rapids, Mich.

Manufacturers of PLYMETL AIR-TIGHT household and commercial cabinets and water coolers.

George R. Meyercord, president; James R. Fitzpatrick, secretary; Olin H. Basquin, chief engineer; Frank M. Curran, factory manager.

The Hibbard Company, 6504 Euclid Ave., Cleveland, Ohio. Factory at Parma, Ohio.

Manufacturers of cabinets for household and commercial electric refrigerators; beverage cabinets; UTILITY refrigerators.

H. W. Hibbard, president; I. B. Hibbard, secretary.

The Home Products Corp., Jackson, Michigan.

Manufacturers of WHITE FROST and CASTLE household electric refrigerator cabinets.

George H. Hannum, president; H. C. Castle, vice-president; C. B. Castle, secretary-treasurer and general manager; H. A. Matthews, sales manager; G. A. Christman, purchasing agent.

Illinois Refrigerator Co., Morrison, Ill.

Manufacturers of household and commercial electric refrigerator cabinets.

Edward A. Smith, president; F. L. Smith, vice-president and general manager; Harry L. Kirberg, treasurer; Humphrey T. Rendall, secretary; Arthur J. Freer, sales manager.

Jewett Refrigerator Co., 2 Letchworth St., Buffalo, N. Y. Factories at Buffalo, Lackawanna, Bridgeburg, Can.

Manufacturers of JEWETT cabinets for household and commercial electric refrigerators; water coolers and ice makers.

E. B. Jewett, president and general manager; C. D. Wheeler, vice-president and sales manager; R. Jewett, vice-president; H. J. Hedrick, vice-president; B. A. Simon, purchasing agent; R. C. Calkins, works manager.

J. T. Manufacturing Co., 666 Lake Shore Drive, Chicago, Ill. Factory at Nashville, Tenn.

Manufacturers of cabinets for household electric refrigerators.

A. C. Jones, president; Jacob Teller, vice-president and sales manager; L. E. Stephens, secretary-treasurer.

Leonard Refrigerator Company, Grand Rapids, Mich. Subsidiary of the Electric Refrigeration Corp.

Manufacturers of LEONARD CLEANABLE cabinets for household and commercial electric refrigerators.

H. W. Burritt, president; H. C. Leonard, vice-president and general manager; A. H. Jaeger, sales manager; Earl Lines, advertising manager; A. J. Mitchell, purchasing agent; H. L. Pope, chief engineer; Barney DeWitt, factory manager.

Louisville Refrigerator Corporation, 4460 Louisville Ave., Louisville, Ky. Factory located at Highland Park, Ky.

Manufacturers of WHITE SEAL cabinets for household electric refrigerators.

H. S. Milton, president and secretary; H. P. Dowling, treasurer; Geo. W. Grove, sales manager.

L. H. Mace & Co., Inc., 55 East 150th St., New York, N. Y.

Manufacturers of MACE household electric refrigerator cabinets.

Samuel Steinfeld, president; Lew Hutzler, treasurer; Wm. Lurie, secretary; Ralph Redell, general manager.

McCray Refrigerator Sales Corp., Kendallville, Indiana.

Manufacturers of McCRAY household and commercial electric refrigerator cabinets.

E. E. McCray, president; H. McCray, vice-president; J. W. Hart, secretary; R. E. Davis, treasurer; H. M. Stewart (vice-president), general manager; R. J. Rehwinkel, advertising manager; R. J. Misselhorn, southern sales manager; M. A. Drumbheller, western sales manager; H. E. Culbertson, central sales manager; H. R. Hawkins, eastern sales manager; W. V. Herr, manager collection department; N. A. Lindvall, special follow-up department manager; G. R. Bangs, branch auditor.

Metz Products Corp., 3051 Rosslyn St., Los Angeles, Calif.

Manufacturers of METZ SUPERINSULATED cabinets for household electric refrigerators.

Walter Metz, president; Edwin H. Metz, secretary-treasurer.

Northey Manufacturing Co., Park Ave. and Bluff St., Waterloo, Iowa.

Manufacturers of NORTHEY household and commercial electric refrigerator cabinets and water coolers.

F. L. Northey, president; Hugh McCartney, general sales manager; A. Snodgrass, factory superintendent.

Ottenheimer Bros., Inc., Fallsway and Hillen Sts., Baltimore, Md.

Manufacturers of OREOLE cabinets for household and commercial electric refrigerators; illuminated and non-illuminated refrigerator display cases.

R. E. Ottenheimer, president; B. M. Ottenheimer, vice-president; S. M. Ottenheimer, secretary-treasurer; R. E. Ottenheimer, general manager; L. M. Hess, sales manager; A. T. Golding, advertising and sales promotion manager; J. B. Ottenheimer, factory manager.

Progress Refrigerator Co., branch of Louisville Tin & Stove Co., 621 W. Main St., Louisville, Ky.

Manufacturers of PROGRESS electric refrigerator cabinets.

W. L. Hollis, president; C. C. Cloud, vice-president; C. V. Edmonds, secretary-treasurer.

Reol Refrigerator Co., Hillen and Front Sts., Baltimore, Md. Subsidiary of Ottenheimer Bros., Inc.

Manufacturers of REOL cabinets for household and commercial electric refrigerators; illuminated refrigerator display cases.

Rex Manufacturing Co., Western Ave., Connersville, Ind.

Manufacturers of REX household and commercial electric refrigerator cabinets.

Charles C. Hull, president; M. Lair Hull, vice-president; James H. Heron, secretary-treasurer; Raymond H. Crawford, sales manager; Jos. T. McKinney, advertising manager; Edgar Myers, sales promotion manager; W. O. Hull, purchasing agent; M. R. Hull, factory manager.

Rhineland Refrigerator Company, Rhineland, Wis.

Manufacturers of AIRTITE cabinets for household and commercial electric refrigerators. R. A. Riek, general manager.

Specifications Tests and Adjustments

Specialist in
Fire Underwriters'
Requirements

ESTABLISHED 35 YEARS

FREMONT WILSON

Fellow American Institute of Electrical Engineers

50 Church Street NEW YORK LaSalle Hotel CHICAGO

LEONARD E. ROLLINS, M.E.
DETROIT, MICH.

(Member Am. Soc. Ref. Eng.)

General Consulting Service—Tests Witnessed and Certified Reports for Investors and Bankers. Patent advice and suggestions.

To Central Station Commercial Managers

Send us the names of your sales and service men and we will mail sample copies of Electric Refrigeration News to them.

Many manufacturers, distributors and dealers have already done so in order that their employees may become better informed about the business. (The live ones will subscribe.)

Electric refrigeration is new and developing rapidly. Improvements are being made in equipment, new tools and accessories are being put on the market, selling helps and training courses are being offered, advancements in sales and service methods are constantly coming out.

Electric Refrigeration News has located many sources of highly valuable information which will be extremely helpful to your organization. The history and background of the business are being published, important data on equipment and companies is being made available. Facts and figures on the market are coming in.

Electric Refrigeration News is devoted to this one industry. Every column will be interesting to the men and women in the business.

ELECTRIC REFRIGERATION NEWS
554 Maccabees Bldg., Detroit

TIME IS MONEY —

We save both! — because — we have previously prepared graphic charts showing patent situations covering Electric Refrigeration. We can assist you direct or work with your patent attorneys in making charts of your patent situation. We can save you both time and money.—Correspondence invited.

H. R. VANDEVENTER
M. THEODORE SIMMONS

Registered Patent Attorneys

342 MADISON AVENUE
NEW YORK CITY

We Know . . .

the answer to problems that face the manufacturers of electric refrigerating machines today. ☐ We can assist only a limited number of clients in the refrigerating industry. ☐ Write for bulletins; we want to prove to you that we can serve you advantageously. ☐ No charge for preliminary conferences.

H. R. VANDEVENTER, Inc.

Consulting Engineers, Sales and Advertising Specialists

1018 Canadian Pacific Bldg.

NEW YORK CITY

Rome Manufacturing Co., Railroad St., Rome, N. Y.
Manufacturers of ROME commercial electric refrigerator and ice cream cabinets; condensers and expanders.
P. C. Thomas, president; Barton Haselton, vice-president; E. L. Spriggs, vice-president; C. P. Drake, secretary-treasurer; P. C. Thomas, general manager; C. P. Drake, sales manager; W. P. Davis, sales promotion and service manager; James Warren, works manager; C. A. Xardell, chief engineer.

Seeger Refrigerator Company, Arcade-Wells Sts., St. Paul, Minn.
Manufacturers of SEEGER electric refrigerator cabinets for household and commercial use.

John A. Seeger, president; Walter G. Seeger, vice-president; G. R. Seeger, secretary-treasurer; John J. Leonard, sales manager; W. G. Seeger, advertising manager; R. S. Ahrens, chief engineers; G. R. Seeger, works manager; T. LaVelle, works manager; R. A. Carlton, service manager.

Electric Refrigeration Directory—Section 3

Parts, Accessories, Materials and Chemicals

Advance Electric Co., 6315 Maple Ave., St. Louis, Mo.
Manufacturers of ADVANCE motors for commercial electric refrigeration machines.

Edward Bretch, president; A. L. Canavan, vice-president.

Albaugh-Dover Mfg. Co., 21 Marshall Blvd., Chicago, Ill.
Manufacturers of AD gears.

P. A. Mortenson, president; O. Dover, vice-president; F. G. Eppley, vice-president; W. E. Smith, secretary; E. W. Buck, treasurer; O. Dover, general manager; M. T. Welters, purchasing agent; W. R. Schwab, M. E. chief engineer; E. F. Eppley, works manager.

American Radiator Co., Industrial Division, 816 South Michigan Ave., Chicago, Ill. Factories at Springfield, Ill.

Manufacturers of float valves, domestic refrigerating units, automatic expansion valves.

Ansul Chemical Co., Marinette, Wis.

Manufacturers of ANSUL chemicals.

F. G. Hood, president; H. V. Higley, secretary; W. R. Giles, chief chemist.

Arcade Mfg. Co., 1212 E. Shawnee St., Freeport, Ill.

Manufacturers of household and commercial refrigerator hardware, hinges, locks, corners, traps, etc.

E. H. Morgan, president; L. L. Munn, vice-president; I. P. Gassman, secretary; B. C. Trueblood, treasurer; L. L. Munn, general manager; I. P. Gassman, sales and advertising manager; T. J. Bordner, purchasing agent.

Armstrong Cork & Insulation Co., 24th St. & Allegheny River, Pittsburgh, Pa. Branch of Armstrong Cork Co. Factories at Beaver Falls, Pa., Camden, N. J., and Seville, Spain.

Manufacturers of corkboard insulation; cork pipe covering.

C. D. Armstrong, president; C. D. Armstrong, Jr., vice-president; C. R. Lyle, vice-president; C. D. Armstrong, Jr., general manager; C. R. Lyle, sales manager; S. L. Barnes, advertising manager; E. E. Baker, purchasing agent.

Atlas Plywood Corp., 934 Park Square Bldg., Boston, Mass. Factories at Stockholm, Me., Greenville, Md., Richford, Vt., Montgomery Center, Vt., Morrisville, Vt.

Manufacturers of ATLAS PLYWOOD refrigerator shipping cases.

R. M. Buck, president; T. R. Winchell, vice-president; E. M. Soucy, treasurer.

Berry Brothers, 211 Lieb St., Detroit, Mich.

Manufacturers of BERRYLOID LACQUER LIONOIL, enameling, rust-proofing materials, varnishes and stains.

F. L. Colby, president; W. R. Carnegie, vice-president; George V. Blenkarn, treasurer; F. L. Colby, Jr., secretary.

Bush Mfg. Co., 100-110 Wellington St., Hartford, Conn.

Manufacturers of condensers and expanders.

Richard J. Goodman, president; James W. Hatch, treasurer; Edw. M. Flannery, assistant secretary; James W. Hatch, general manager; Charles W. Cooksley, production manager; Edward M. Flannery, purchasing agent.

Cork Import Corp., 345 W. 40th St., New York, N. Y. Factories at Port Newark, N. J., Palafrugell, Spain, Palamos, Spain.

Manufacturers of NOVOID corkboard, NOVOID cork covering.

H. H. Strauss, president; W. C. Landeck, vice-president; T. N. Word, secretary and treasurer; J. H. Stone, general sales manager; Wm. F. Grupe, chief engineer.

The Domestic Electric Co., 7209 St. Clair Ave., Cleveland, Ohio.

Manufacturers of DOMESTIC motors for household and commercial electric refrigerators.

C. A. Duffner, president; M. H. Spielman, vice-president; A. N. Kellogg, treasurer; C. A. Duffner, general manager; E. S. Sabin, sales manager; M. W. Phelps, purchasing agent; J. D. Cole, chief engineer; W. H. Poesse, works manager.

E. I. DuPont de Nemours & Co., Inc., Chemical Products Division, Parlin, N. J.

Manufacturers of chemicals, paint, DUPONT DUCO and varnish, finishing materials.

D. A. Ebinger Sanitary Mfg. Co., 180 Lucas St., Columbus, O.

Manufacturers of EBCO water coolers.

D. A. Ebinger, president; D. H. Ebinger, vice-president and general manager;

H. H. Luckart, secretary; D. A. Ebinger, treasurer; H. H. Leukart, sales manager; A. E. Smith, refrigeration department sales manager; J. A. Tharpe, purchasing agent.

Electrical Testing Laboratories, 80th St. and East End Ave., New York, N. Y.

John W. Lieb, president; C. H. Sharp, Ph.D., vice-president and technical director; Preston S. Millar, general manager; F. Malcolm Farmer, M. E. chief engineer; Norman D. MacDonald, sales manager.

Excelsior Motor Mfg. & Supply Co., 3701 Cortland St., Chicago, Ill.

Manufacturers of EXCELSIOR household and commercial electric refrigerator units, pumps and compressors, control devices, drop-forged flanged valves and fittings for ammonia service.

Ignaz Schwinn, president; Frank W. Schinn, vice-president and general manager; J. M. Grossmith, secretary; Ignaz Schwinn, treasurer; M. W. Craw-

ford, sales manager, refrigerator division; Gid Haynes, sales manager; Wesley G. Paulson, advertising manager; J. E. Anderson, purchasing agent; A. P. Anderson, chief engineer, refrigeration division; D. E. Rutishauser, manager, service engineering department.

Federal Asbestos & Cork Insulation Co., 931 30th St., Milwaukee, Wis.
Manufacturers of FEDERAL cabinets for household and commercial electric refrigerators.

Charles Dieringer, president.

Federal Gauge Co., 564 W. Adams St., Chicago, Ill.

Manufacturers of thermostats and other control devices.

L. H. Van Ness, president; J. W. Owens, vice-president, Chicago office; N. J. Allaben, vice-president, New York office; M. Howard, vice-president, San Francisco office; W. C. Capen, vice-president, St. Louis office; E. J. Holland, secretary; F. W. Peterson, treasurer.

Fedders Mfg. Co., Buffalo, N. Y.

Manufacturers of water coolers; other special applications; tubing; condensers and expanders; thermostats; float valves and other control devices; brine tanks; freezing units; expansion valves; liquid receivers; filters; strainers; trays and grids.

L. F. Fedders, president; J. M. Fedders, vice-president; C. W. Fedders, vice-president; T. C. Fedders, treasurer; H. M. Yeager, vice-president; H. L. Heitzman, secretary.

Fidelity Electric Co., 331 N. Arch St., Lancaster, Pa.

Manufacturers of FIDELITY motors for household and commercial electric refrigeration machines.

Flintlock Corp., 4461 Jefferson Ave. W., Detroit, Mich.

Manufacturers of FLINTLOCK condensers and expanders.

C. H. L. Flintermann, president; John Karmazin, vice-president; Elis L. Larson, sales manager.

Goodnow & Blake Mfg. Co., 3840 Beaver St., Detroit, Mich.

Manufacturers of thermostats, suction controls, high pressure cut-outs and other control devices; shaft seals and floats.

Geo. J. Korte, president; A. F. Korte, vice-president; E. B. Goodnow, secretary and treasurer; Manuel Lassen, consulting engineer.

The International Nickel Co., Inc., 67 Wall St., New York, N. Y. Factories located at Huntington, W. Va.

Manufacturers of INCO Monel Metal sheet, strip, rod, castings, screws, bolts, rivets, etc.

J. F. McNamara, salesmanager Monel Metal and Roller Nickel Department.

Kulair Corp., Industrial Bldg., Preston St. and Brentwood Ave., Baltimore, Md.

Manufacturers of condensers and expanders, and thermostats.

Phillips F. Lee, president; W. W. Moss, vice-president and treasurer; Frank C. Brady, secretary; A. J. Kusel, G. W. Gail, engineers.

Marathon Electric Mfg. Co., Wausau, Wis.

Manufacturers of MARATHON "OK" motors for electric refrigerators.

J. S. Alexander, president; A. P. Woodson, vice-president; L. H. Wheeler, treasurer; L. H. Wheeler, general manager; J. W. Kapus, sales and advertising manager; W. N. Baldwin, purchasing agent; R. O. Gilburg, superintendent.

McCord Radiator & Mfg. Co., East Grand Blvd. and Riopelle St., Detroit, Mich. Factories at Detroit, Plymouth, Ind., and Walkerville, Ont.

Manufacturers of tubing, condensers and expanders, enameling, gaskets, diaphragms, stampings (steel, brass and copper).

A. C. McCord, president; C. R. Hammer, vice-president and treasurer; Morrill Dunn, vice-president in charge of sales; P. L. Barter, vice-president in charge of sales; E. O. Bodkin, advertising manager; J. Cooper, purchasing agent; J. Harris, chief engineer; R. M. Hyde, engineer; C. W. Owston, vice-president and works manager; F. W. Hicks, factory manager.

Mueller Brass Co., 1925 Lapeer Ave., Port Huron, Mich.

Manufacturers of tubing.

O. B. Mueller, president and general manager; F. L. Riffin, secretary and sales manager; R. W. Peden, treasurer; Robert Mueller, vice-president (Decatur, Ill.); Reuben Levine, advertising manager; H. A. McDermott, purchasing agent; C. A. Hill, chief engineer; D. E. Lindquist, superintendent.

The National Cooper & Smelting Co., 12120 Euclid Ave., Cleveland, Ohio. Factory at 1895 Colman Road, Cleveland.

Manufacturers of brass and copper seamless tubing.

H. L. Smith, president; H. F. Taylor, vice-president; Homer B. Smith, secretary; C. L. Smith, treasurer; H. B. Smith, general manager; George Staffeld, factory manager.

The Ohio Electric and Controller Co., 5900 Maurice Ave., Cleveland, Ohio.

Manufacturers of OHIO electric motors.

F. W. Jessop, president; A. D. Walter, vice-president; C. Whittier, secretary and treasurer; P. H. Diver, sales manager.

Penn Electric Switch Co., 306 Twelfth St., Des Moines, Iowa.

Manufacturers of thermostats and other control devices, high and low pressure safety switches, pressure-vacuum operated control switches.

Albert Penn, general manager and sales manager; Ralph Penn, advertising manager; M. D. Disisway, factory manager.

Refrigeration Products Co., 670 E. Woodbridge St., Detroit, Mich.

Manufacturers of rotary compressors.

John C. Schott, president; Ray E. Davis, secretary-treasurer.

The Roessler & Hasslacher Chemical Co., 709 Sixth Ave., New York, N. Y.

Factories at Niagara Falls, N. Y., Perth Amboy, N. J., St. Albans, W. Va.

Manufacturers of Arctic (Methyl Chloride), Ethyl Chloride.

W. A. Hamann, president; H. R. Carveth, first vice-president; P. Schleussner, second vice-president and secretary; Albert Frenkel, treasurer; Milton Kutz, sales manager; T. Coyle, service engineer.

Sherer-Gillett Co., 1701-09 S. Clark St., Chicago, Ill. Factories at Marshall, Mich.; Herkimer, N. Y., and Guelph, Ontario.

Manufacturers of freezer display and storage cases.

S. J. Sherer, president; R. P. Sherer, vice-president; Edw. Cohn, secretary-treasurer; W. R. Featherstone, sales manager; W. T. Sherer, production manager.

Stow Mfg. Co., Inc., 443 State St., Binghamton, N. Y.

Manufacturers of motors for commercial electric refrigerator machines, grinders for interior cabinet work, grinders for lap and electric wells.

C. F. Hotchkiss, president; D. Walker West, vice-president and treasurer; C. E. Hotchkiss, secretary; D. Walker West, general manager; Jas. P. Dickinson, factory manager.

United Cork Companies, Grant Ave., Lyndhurst, N. J.

Manufacturers of CRESCENT corkboard insulation.

Edward Bose, president; Edwin J. Ward, secretary; Peter Binzel, Jr., treasurer; L. T. Sibley, sales promotion manager; Q. J. Schwarz, superintendent.

Virginia Smelting Co., West Norfolk, Va.

Manufacturers of chemical, extra dry Esotop; sulphur dioxide (anhydrous).

Wagner Electric Corp., 6400 Plymouth Ave., St. Louis, Mo.

Manufacturers of motors for household and commercial electric refrigerators.

P. B. Postlethwaite, president; A. H. Timmerman, vice-president; G. L. Evans, vice-president; J. W. Wescott, secretary; V. W. Bergenthal, treasurer; E. H. Cheney, sales manager; E. A. Forkner, small motor sales manager; J. B. Eby, purchasing agent; G. A. Water, chief engineer; G. B. Evans, general superintendent; J. H. Devor, service manager.

Western Automatic Machine Screw Co., Elyria, Ohio.

Manufacturers of screw machine products for use in the manufacture and assembly of electric refrigerators, standard cap and set screws, semi-finished nuts, studs and taper pins.

B. C. Franklin, vice-president and general manager; F. H. Bryant, secretary; C. H. Smith, treasurer; R. D. Oldfield, sales manager; F. H. Bryant, purchasing agent.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Manufacturers of motors for commercial machines.

C. D. Kester, Synchronous motor section, motor apparatus sales.

E. J. Wirfs Organization, Inc., 135 S. 17th St., St. Louis, Mo.

Manufacturers of Wirfs AIRTITE cushion gasket; home comfort weather-strip.

E. J. Wirfs, Sr., president; A. H. Smith, vice-president; E. J. Wirfs, Jr., secretary-treasurer; A. H. Smith, director of sales; E. J. Wirfs, Jr., advertising manager; R. A. Tris, purchasing agent; Geo. H. Jaromack, factory manager.

Wolverine Tube Co., 1411 Central Ave., Detroit, Mich.

Manufacturers of copper tubing and coils.

Chas. C. Limbaker, president; Harry J. Hooks, secretary and treasurer.

CLASSIFIED COLUMN

Note: Replies to advertisements with "box numbers" should be addressed to Electric Refrigeration News, 409 E. Jefferson Avenue, Detroit, Michigan. Advertising rates for this column only: Positions wanted 40 cents per line for one insertion, \$1.00 per line for three insertions. All other classifications, 50 cents per line for one insertion, \$1.25 per line for three insertions.

POSITIONS WANTED

Sales executive, fifteen years' experience, now branch manager in Middle West city. Selling electric refrigeration. Exceptional sales credentials and record. Desires permanent position with financially sound organization. Address Box 32.

Five years' experience in household electrical refrigeration. Open for position as production manager or will take charge of production planning—time study and general plant efficiency management. Open for immediate connection. Box 33.

Refrigeration Engineer will design and build for reliable concern a direct driven household ice machine that is efficient, compact and positively quiet. Or I can improve your present machine by eliminating oil pumping, seal troubles, noisy expansion valves, etc. Well acquainted with patent situation. Address Box 36.

Junior sales executive, fifteen years experience in selling, conducting intensive sales campaigns, handling salesmen. Two years territory supervisor electrical refrigeration working new dealer connections, contracting with power companies, organizing sales forces. Age 35, college man. Prefer position in west or middle west as branch manager or manufacturer's agent. Box 37.

A Business Opportunity

A practical engineer with 16 years' experience in the refrigeration field is resigning an active connection to manufacture a line of accessories essential to the refrigeration industry. He invites capital up to \$20,000 in return for a share in the business and active participation by the investor if he desires. Address Box 34.

Club Rates

Manufacturers, Distributors and Dealers are invited to enroll members of their organizations as subscribers to Electric Refrigeration News in clubs of ten or more at the special rate of 75 cents per year each (\$7.50 for ten). Papers will be sent to one address or mailed individually as desired.

Electric Refrigeration News

554 Macabees Bldg.
Detroit, Mich.

HOW TO OBTAIN BACK ISSUES OF THE NEWS

Many subscribers are requesting that their subscriptions be dated back to the first issue, so that they may obtain a complete file of the paper. We regret to announce that we are unable to furnish copies of certain issues, and that it will hereafter be necessary to start all new subscriptions with the next issue of the paper appearing after the order is received. The present supply of back issues is as follows:

Copies Available at Five Cents Each:

No. 3—October 30, 1926
No. 4—November 20, 1926
No. 7—January 5, 1927
No. 8—January 19, 1927
No. 9—February 2, 1927
No. 10—February 16, 1927
No. 11—March 2, 1927
No. 13—March 30, 1927
No. 14—April 13, 1927
No. 15—April 27, 1927
No. 16—May 11, 1927
No. 17—May 25, 1927

Very Limited Supply—Five Cents Per Copy While They Last:

No. 5—December 8, 1926
No. 6—December 22, 1926
No. 12—March 16, 1926

None Available—Cannot Furnish

No. 1—September 11, 1926
No. 2—October 6, 1926

Note: To obtain back issues, send cash or stamps with order. If we are unable to fill your complete order, any over-payment will be returned. Address ELECTRIC REFRIGERATION NEWS, 554 Macabees Bldg., Detroit, Mich.

His One Hope

Visitor: "You poor man! So you are to go to the electric chair in three weeks?"
Condemned Prisoner: "Yep; I only hope dat de warden forgets to pay dis month's light bill!"

Subscription Order

BUSINESS NEWS PUBLISHING CO.
554 MACABEES BLDG.
DETROIT, MICH.

DATE.....

Gentlemen:

Please enter my subscription to ELECTRIC REFRIGERATION NEWS, the Business Newspaper of the Electric Refrigeration Industry, starting with the issue of June 8, 1927.

United States: ☐ \$1.00 per year ☐ Three years for \$2.00.

Foreign Countries: ☐ \$1.50 per year.

I am enclosing payment in the form of

☐ Check ☐ P. O. Order ☐ Cash ☐ Stamps

Name

Company

Street Address

City and State

☐ NOTE: If it is inconvenient for you to enclose payment with this order, check this square and invoice will be mailed. Do it now, while you have the blank before you. It will save the time and trouble of writing a letter and you will be sure to get the next issue.